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No. 25

900 at First NPFI Meeting Hear Latest On Mixtures, Youth Work in Agriculture

1954 Fertilizer Consumption Sets Record, NFA Report Shows

Consumption Totals
20,508,000 Tons
For 1.4% Increase

WASHINGTON — Fertilizer consumption in the U.S. during the calendar year 1954 totaled 20,508,000 tons, for a new record, according to the National Fertilizer Assn.

This represents an increase of 277,000 tons, or 1.4% over the 20,231,000 tons used during 1953.

NFA points out that 1954 was the 16th consecutive year that fertilizer consumption reached a new high. This record of increases began in 1938 when fertilizer use totaled 15,480,000 tons.

The report of 1954 consumption was released in an article by John F. Gale in the current issue of Plant Food Review. The study is based on preliminary although authoritative estimates and may be subject to minor adjustments, Mr. Gale said.

Plant food content of fertilizer also continues upward. There is every indication that the average nutrient content of all fertilizers—mixed goods and straight materials for application—has climbed to at least 26.6%, according to the report.

This means that about 5,435,000 tons of plant food nutrients were applied during 1954. This is 377,000 tons, or 7.3%, more than the 5,058,000 tons consumed in 1953.

Figures in the report are for the calendar year. The USDA report in Croplife, page 1, May 30) is for the calendar year ended June 30, 1954.

A complete story of the report, including state by state statistics, will appear in next week's issue of Croplife.

IC to Purchase VA Phosphate Plant in Tennessee

CHICAGO—International Minerals and Chemical Corp. has confirmed plans to buy the Tennessee Valley Authority's Godwin phosphate plant at Columbia, Tenn.

Louis Ware, International's president, stated that acquisition of the plant, built by the government in 1922, will enable the company to expand phosphate rock output in the area. Purchase price was stated to be \$15,000 and includes 406 acres of land, some railroad siding and all the equipment. The plant and equipment are being renovated before mining begins.

WHITE SULPHUR SPRINGS—A new depth and an expanded vision of the U.S. fertilizer industry provided a backdrop for the preliminary meeting of the National Plant Food Institute at the Greenbrier here June 12-15.

About 900 attended this first session of the new organization, which becomes official July 1, formed by the consolidation of the National Fertilizer Assn. and the American Plant Food Council.

Besides providing a sounding board for this new industry voice, the convention had a top rate formal program.

It got off to a fast start the morning of June 13 when an overflow

crowd was on hand to hear the latest information on fertilizer-pesticide mixtures from a panel of experts. That story appears elsewhere on this page.

There was a heartwarming change of pace the morning of June 14 when a youth panel, consisting of representatives of young farmer organizations, presented, in light and serious vein, some fresh viewpoints on fertilizer's place in the economy. See the story of this panel on page 8 of this issue.

Also on the morning of June 14, members heard E. A. Geoghegan, Southern Cotton Oil Co., New Orleans, chairman of the NFA board

Fertilizer-Insecticide Mixture Developments Summarized by Panelists at NPFI Convention

WHITE SULPHUR SPRINGS, W. VA.—A panel discussion June 13 on problems surrounding the manufacture, labeling, liabilities and application of fertilizer-pesticide mixtures brought the National Plant Food Institute convention up to date on the latest thought on the subject by experts in the field.

Under the chairmanship of M. V.

National Plant Food Institute Officers Named

WHITE SULPHUR SPRINGS — J. A. Howell, president of Virginia-Carolina Chemical Corp., Richmond, Va., will become president and E. A. Geoghegan, vice president of Southern Cotton Oil Co., New Orleans, will become chairman of the board of the National Plant Food Institute on July 1.

Institute officers were named at a June 13 meeting of the board of directors-elect meeting as a committee at the Institute convention here.

Other officers, all of Washington, elected to assume office July 1, are Dr. Russell Coleman and Paul T. Truitt, executive vice presidents; W. R. Allstetter, vice president; Louis H. Wilson, secretary, and W. S. Ritnour, treasurer.

Dr. Coleman now is president of the National Fertilizer Assn., and Mr.

(Continued on page 20)

Bailey, American Cyanamid Co. agronomist, the panel comprised Dr. K. D. Jacob, head of the Division of Fertilizer and Agricultural Lime of the Soil and Water Conservation Research Branch, Agricultural Research Service, U.S. Department of Agriculture, Beltsville, Md.; Charles T. Harding, general manager, fertilizer division of Virginia-Carolina Chemical Corp., Richmond, Va.; Rodney C. Berry, Virginia state chemist, Richmond, and John D. Conner, attorney, Washington, D.C.

In his introduction to the panel discussion, moderator Bailey pointed out that the control of pests and supplying nutrient elements to plants with a "one shot" treatment, is not a new thing, but that it is only in late years that mixtures of fertilizers and pesticides have been used in sizeable amounts. The reason for this increase is not difficult to determine, he said.

In the first place, American farmers are suffering increasingly large crop losses because of soil borne pests, and chemical pesticides are available which will eradicate or con-

(Continued on page 6)

and chairman-elect of the NPFI board, and Edwin Pate, Dixie Guano Co., Laurinburg, N.C., chairman of the APFC Executive Committee and a director-elect of the new group, outline some of the objectives and purposes of the Institute.

Mr. Geoghegan had a warm word for those who worked to bring the new organization into being, and he urged members to lend it their support and cooperation.

Mr. Pate reminded the group that now the industry will speak with a new voice, but with one that has a familiar tone. He listed these objectives for the Institute:

To foster and promote, within the framework of a competitive free enterprise system, the lawful and legal interests of the fertilizer industry;

To encourage and support agricultural research and to aid in the dissemination of the findings thereof;

To cooperate with the fertilizer control officials in the several states in accomplishing a better understanding of the state fertilizer laws, and

To carry on educational and public relations programs to increase the public knowledge, acceptance and proper use of fertilizer.

The Institute's yardstick, Mr. Pate said, could be, "If it's not good for agriculture, it's not good for the industry that serves agriculture."

E. L. Peterson, assistant secretary of agriculture, told the convention that "the price support policy of the U.S. Department of Agriculture is emerging as a dynamic, positive operation in the development of a sound agricultural economy." He denied that it

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Fertilizer Plant Safety Meeting Cites Progress

ROANOKE, VA.—A reduction of 47% in accident frequency rates in North Carolina fertilizer plants was reported by W. C. Creel, of the North Carolina department of labor in a report to the executive committee of the Fertilizer Safety Section here June 12. Through state-wide cooperation frequency rates were reduced in two years from 18.6% in 1952 to 9.8% in 1954, he said.

Mr. Creel's report was one of a

series of similar ones by chairmen of various committees of the executive group. Thomas J. Clarke, general chairman, was in charge of the Roanoke meeting. Progress reports indicated that the fertilizer safety movement is moving ahead in most of the states.

Vernon Gornito, Smith-Douglass Co., Norfolk, Va., said that membership is on the increase, but efforts

(Continued on page 31)

INSECT, PLANT
DISEASE NOTES

See Page 4

"Poor" Pastures Need Fertilizer

WASHINGTON—Plenty of seed but too little lime and fertilizer sums up the "poor luck" many farmers have in establishing a good pasture, according to Dr. David F. Beard, forage-crops specialist of the U.S. Department of Agriculture.

Dr. Beard cites nearly a score of common reasons for poor stands and failures—including planting seed too deep or too shallow, lack of firmness of seed bed, use of poor quality or unadapted seed, and competition by weeds or grain companion crops—but believes that lack of plant nutrients is a major cause.

Notwithstanding the fact that grasslands affect the income and profit made on at least four million of our nation's farms, pasture and range crops have long been relegated to the "second table," he says. The complacency shown by many growers in regard to regular and disastrous stand failures is costing them an extra \$50 million a year for seed.

Research at USDA's Plant Industry Station, Beltsville, Md., and at several state experiment stations supports these three basic conclusions in relation to the fertilization of eastern pasture plantings:

1. Available plant nutrients in ample quantities increase the chance of establishing legume-grass seedlings throughout the humid area.

2. Placement of applied nutrients, especially phosphorus, in relation to seed is often more important than the amount applied.

3. Proper fertilization hastens early seedling growth, helps overcome weed competition, and often increases the yield of the first harvested crop, whether hay or pasture.

Reporting on experiments carried out at Beltsville by the USDA's Agricultural Research Service, Dr. Beard said that placing high-phosphate complete fertilizer near the seed at planting time resulted in first harvest yields averaging 2,210 lb. of weed-free forage per acre. Weed content ranged from a trace to 22%. The poorest plots were those fertilized or seeded broadcast; these averaged only 410 lb. of forage, containing from 40 to 70% weeds, and were considered failures.

Soil acidity is also a common cause of legume failure in the East, Dr. Beard says, despite the availability of simple tests to determine this condition, and the ease of correcting it with lime applications.

Du Pont Declares Quarterly Dividend

WILMINGTON, DEL. — Directors of E. I. du Pont de Nemours & Co. have declared a dividend of \$1.25 per share on the common stock as the second quarterly interim dividend for 1955, payable June 14, 1955, to stockholders of record May 23, 1955. A dividend of \$1.25 per share was paid in the first quarter.

The company recently announced earnings of \$2 per share of common stock for the first quarter of this year; \$1.59 per share from the company's operating activities and 41¢ from General Motors Corp. dividends.

The regular quarterly dividends of \$1.12½ per share on the preferred stock—\$4.50 series—and 87½¢ per share on the preferred stock—\$3.50 series—also were declared, both payable July 25, 1955, to stockholders of record July 8, 1955.

RESEARCHER COMMENDED

SACRAMENTO — The California Board of Agriculture has commended Dr. Harry R. Wellman, vice president for agricultural sciences of the University of California, for his work in nematode research.

Diamond Alkali Adds Two Representatives To Southeast Staff

MEMPHIS — Diamond Alkali Co. has added two representatives to its southeastern sales staff to serve customers in Florida and southern Georgia, according to an announcement by R. B. Perry, Memphis branch sales manager.

Appointees are Robert M. Hopkins, assigned to central and southern Florida, and Richard J. Jones, who will cover northern Florida and southern Georgia. Mr. Hopkins makes his headquarters in Lakeland at 719 Louise Drive, while Mr. Jones is located in Jacksonville at 2805 Southside Blvd.

At the same time, Mr. Perry announced that Charles P. Egolf, who has represented Diamond in Florida since August, 1953, has been transferred to Memphis to take over sales responsibilities relinquished by Martin F. Wilkerson, recently promoted to manager of the company's branch sales office at Houston.

New California Law Affects Klamath Weed

SACRAMENTO—Gov. Goodwin J. Knight has signed into law Assembly Bill 1021, reclassifying Klamath weed as a noxious weed in the administration of the California Seed Law.

Section 1 of the bill removes Klamath weed from the list of primary noxious weeds. Section 2 classifies it as a secondary noxious weed.

Because of developments in biological control, this weed is no longer considered to be a range problem. Movement of livestock presents more of a threat of spread to new ranges than does agricultural seed. The weed is usually found only in seeds of the type used for lawns or permanent pastures and its classification as a primary noxious weed worked unnecessary hardship on persons supplying certain lawn and permanent pasture seeds.

Flue-Cured Tobacco Sales Fourth Highest

WASHINGTON — Producers' sales of the 1954 crop of flue-cured tobacco were larger than the volume marketed last year, and were the fourth largest on record, according to the annual review of the flue-cured tobacco marketing season released by the U.S. Department of Agriculture. The general average price was slightly under the 1953-crop figure, but was also the fourth highest quotation for the class. Averages for most grades were lower than the 1953-crop levels.

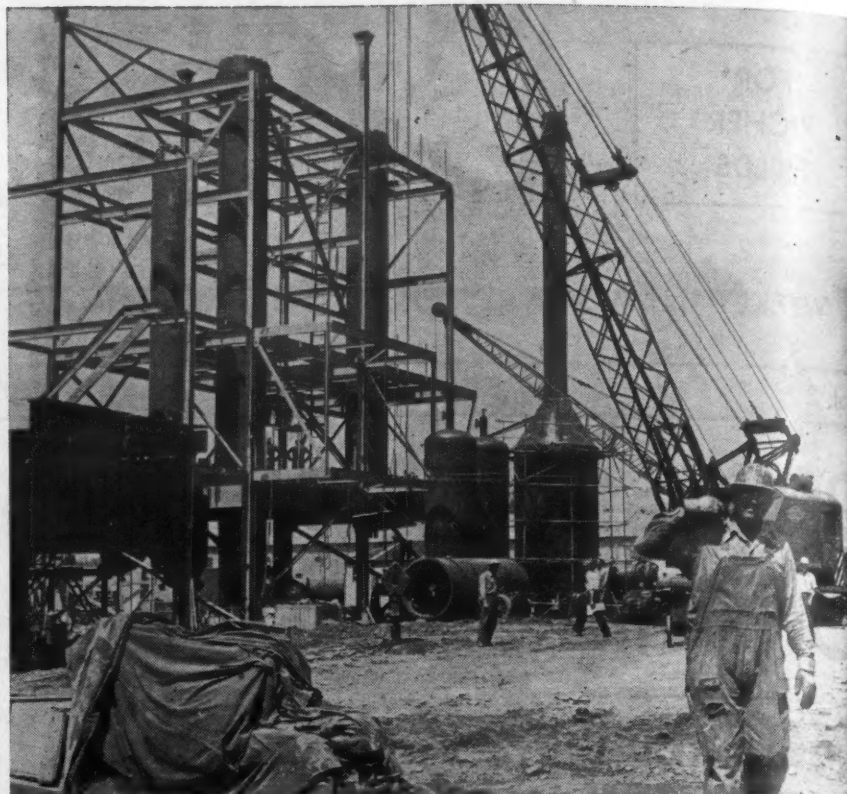
Producers' sales of the 1954 crop totaled 1,311.4 million pounds—42.8 million more than were sold last season. This poundage is exceeded by the 1951, 1952 and 1946 crops, in that order.

The general average price of 52.6¢ lb. was only 0.2¢ under the figure for the previous year. The all-time high price is 53.1¢, received for the 1950 crop.

California Wheat Land Shows Nutrient Lack

BERKELEY, CAL. — Three out of four of 200 wheat grain fields checked in California last year for fertilizer deficiencies needed more plant nutrients, Duane S. Mikkelsen, agronomist at the College of Agriculture of the University of California, reported to more than 200 wheat farmers meeting on the Davis campus for the recent Agronomy Field Day.

About one third of the grain lands responded to nitrogen alone; nearly one sixth needed phosphorus, and about one fourth needed both nitrogen and phosphorus, he said. A few areas were deficient in sulfur.



SOHIO PLANT—Construction is progressing at the Lima, Ohio, site of the new facilities for the Petrochemical Department of the Standard Oil Company (Ohio). The view above shows construction crews at work on the ammonia converter. The first unit, a 300-ton per day anhydrous ammonia plant, will be completed late in September. All major pieces of equipment are set, and pipe work is filling in. The next unit, scheduled for completion Nov. 1, is a nitric acid unit with a capacity of 180 tons per day. The urea unit, last to be in the field, is scheduled to be in operation in January, 1956. Blending, storage, and shipping facilities will be completed along with the producing unit. The utility section of the plant will be placed in operation late in July. Laboratories and shops will be completed Sept. 1. Office facilities are scheduled to be ready Nov. 1.



OLIN MATHIESON GUESTS—Winding up a three-months tour of U.S. experiment stations, equipment plants, feed plants and public utilities, a group of five agricultural specialists from Turkey were guests May 31 of the Olin Mathieson Chemical Corp. in Baltimore. Earlier in their tour the five visited Olin Mathieson's Ammo-Phos plant at Pasadena, Texas, as part of their study of fertilizer manufacture and distribution. Shown with the Turkish specialists here is Dr. Arthur M. Smith, third from left, Olin Mathieson chief agriculturalist.



Richard Meisenbach

Charles W. Haynes

Al Berg

BEAIRD CHANGES—Changes in the J. B. Beaird Co. have brought promotions to four persons and divisional realignments, John L. Tullis, vice president and general manager of sales, has announced. Dealer storage equipment sales will be handled by the new, combined LP-Gas and anhydrous ammonia equipment sales division, and plant storage sales will be handled under the compressor division. Richard Meisenbach, who has been manager of LP-Gas equipment sales and associated with Beaird since 1950, has been named manager of the new LP-Gas and anhydrous ammonia equipment sales division. His duties also include the management for LP-Gas and anhydrous ammonia equipment for The J. B. Beaird Co. of California, in Stockton. Al Berg has been promoted from assistant manager to manager of LP-Gas and anhydrous ammonia system sales. He has been with Beaird since 1947. Charles W. Haynes, who until recently was a staff assistant to the general manager of sales, is the new Beaird manager of dealer storage in the LP-Gas and anhydrous ammonia equipment sales division.



Stanford

Pittsburgh Chemicals Representative

PITTSBURGH — Adams & Chemical Co. announced the appointment of Adams as the Dallas office cultural chemist to serve customers in Kansas, Louisiana, and Oklahoma.

Mr. Adams has been in both agricultural and chemical applications in his work with Coke & Chemical Co. in general management. Mr. Adams' experience includes extensive federal, state, and local agricultural work and field work in Arkansas.

Wison Ad Research

ALTIMORE — The staff of the development division of the Company Division of He has been conducting research at the University of Tennessee.

Dr. Odle is a graduate of the University of Tennessee and has been employed by the Chemical Corporation of Chemicals Co.



Henry

ONE—A landed by H. J. Baker, Jr., of the Florida State University, in a trip. The plane was above with the pilot of the supply plane being damaged. The small plane was before the

Pacific Coast Borax Fills Australian Post

LOS ANGELES—The Pacific Coast Borax Co., Division of Borax Consolidated, Ltd., is acting as host to B. L. Winter, Sydney, Australia, who is traveling throughout the U.S. and Canada. He will be Borax Consolidated's technical field representative in Australia and is familiarizing himself with the company's work.

Mr. Winter is a graduate of Hawkesbury Agricultural College and of Sydney Technical College of Australia and formerly was chief agricultural officer in the British North Borneo Civil Affairs Unit.

Oil Sprays Check Scale, Researchers Report

BERKELEY, CAL.—Oil sprays can be used to combat effectively several scale mite and insect pests, accord-

RANCHERS RAISE FUNDS

PORTALES, N.M. — Ranchers in the Kenna and Elida, N.M., areas raised about \$9,000 for their share of the cost of spraying some 45,000 acres of grasshopper-infested land. The aerial spray job, supervised by George Falkerson of Albuquerque, federal entomologist, was started June 11.

ing to scientists at the Citrus Experiment Station of the University of California.

Petroleum spray oils applied in late summer and early fall will control the scale with a single application, according to Louis A. Riehl, associate entomologist, and Randolph T. Wedding, assistant plant pathologist. If the proper practices are followed there will be no ill-effects to the tree or fruit under many conditions.

Oklahoma Rotary Club Hears Anhydrous Story

MEMPHIS—Jack F. Criswell, executive vice president of the Agricultural Ammonia Institute, told the story of the growth of anhydrous ammonia to 400 Kay County, Okla., farmers at a recent meeting sponsored by the Blackwell, Okla., Rotary Club.

He said that proof of the acceptance of this source of agricultural nitrogen is found in tonnage figures on use of anhydrous ammonia reported by the U.S. Department of Agriculture.

"Since its introduction for farm use eight years ago," Mr. Criswell said, "ammonia for direct application has increased from 20,000 tons (N) in 1947 to 333,000 tons (N) in 1954. Twenty per cent, or one fifth of the total nitrogen used last year was in the form of anhydrous ammonia."



Stanford Adams

Pittsburgh Coke Names Sales Representative

PITTSBURGH — The Pittsburgh Coke & Chemical Co., Pittsburgh, has announced the appointment of Stanford Adams as sales representative of the Dallas office of the company's agricultural chemicals division. He will serve customers in eastern Texas, Kansas, Louisiana and eastern Oklahoma.

Mr. Adams has had broad experience in both agricultural chemical sales and in the development of chemical application techniques. Prior to his appointment by Pittsburgh Coke & Chemical, he served as general manager of Halls' Aero Spraying Co. in Clarksville, Ark.

Mr. Adams' previous experience includes experimental work with various federal agencies on new chemicals and the sale and service of agricultural insecticides for orchards and field crops. Mr. Adams graduated in agronomy at the University of Arkansas.

Davison Adds J. D. Odle to Research Staff

BALTIMORE—John D. Odle has joined the staff of the research and development division, Davison Chemical Company Division of W. R. Grace Co. He has been assigned to work in the research engineering department at the Curtis Bay (Baltimore) plant.

Mr. Odle is a graduate of the University of Tennessee and was formerly employed by the Olin-Mathieson Chemical Corp. and the National Chemicals Corp.



GRADUATION—GIANTS OF THE FUTURE

Congratulations to the June graduates!

These men and women will be taking their places in the business and community life of America.

Their enthusiasm, vision, and faith in the future help speed the growth and service of both business and agriculture.

Businessmen who make commencement addresses are helping create "giants of the future."

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CARLSBAD, NEW MEXICO.

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Midwestern Sales Office . . . First National Bank Bldg., Peoria, Ill.
Southern Sales Office . . . Candler Building, Atlanta, Ga.



Henry E. Hagen

ONE—A 7 ft. 3 in. sailfish landed by Henry E. Hagen of Hagen & Baker, New York, off Ft. Lauderdale, Fla., during a recent vacation trip. The prize specimen, pictured above with "Hank" Hagen and the supplementary catch, is presently being mounted for future display. The smaller fish are bonita before the sailfish hit the bait.



INSECT, PLANT DISEASE NOTES

European Corn Borer, Armyworm in Delaware

NEWARK, DEL. — European corn borer egg masses have been found generally in Kent and Sussex counties. Attack by small borers has been noted from Canterbury southward.

Armyworm damage is evident from Woodside to Bridgeville, especially where plantings have followed green-manure crops. Armyworms, over half grown, are present in moderate numbers in meadows and forage legumes throughout southern Delaware. Light injury is shown in barley and oats, as well as rye and wheat, but at Harrington, damage to about 20 acres of wheat is serious.

Other insect pests in Delaware: Bean leaf beetle, Mexican bean beetle adults and imported cabbageworm

which is reported doing severe damage. The corn blotch leaf miner is prevalent around Leipsic and Harrington.—L. A. Stearns and J. W. Heuberger.

Grasshoppers Still Strong in Kansas

MANHATTAN, KANSAS — There have been no appreciable changes in the grasshopper populations in Kansas during the past week. In many areas of the state recent rains have aided the growth of grasses and weeds making grasshopper infestations less noticeable; however, with the current hatch of the differential grasshopper nymphs, the threatening populations are still present and may increase. Counts of 30 to 40 nymphs (*Melanoplus* spp.), third and fourth

instar, were observed at survey stops in Riley and Wabaunsee counties.

Moderate to heavy infestations of English grain aphids continue to be of concern to growers of wheat and barley in southeast and east central Kansas. Although not all of the grain heads are infested, counts of one to 40 aphids per head are found in many fields.

Destructive populations of armyworms continue in many barley fields of eastern Kansas. These larvae are also found in wheat and brome fields and in some pastures. Populations have decreased in southern counties as the larvae are beginning to pupate and the numerous parasites and predators that are present are giving some control. Additional loss of barley may

occur in east central counties most of the larvae are now feeding on the upper parts of the plants.

Numerous false wireworm beetles have begun appearing in fields along roadsides in central Kansas. Other species are appearing in numbers in most of western Kansas. The beetles are appearing in much greater numbers this year than they have since 1948. This general buildup of populations of this insect is the result of the dry weather that has existed in Kansas during the past few years.

Infestations of yellow clover aphids that were threatening some alfalfa fields in south central Kansas have diminished and at present are considered a problem in alfalfa that area of the state.—David Matthew, Jr.

Codling Moth Villain in Indiana Report

VINCENNES, IND.—Codling moth first brood eggs, laid prior to May, have hatched. Daily emergence of moths in emergence cages has been tapering off rapidly since May, however, emergence records from larvae under overwintering bars show that as of June 6 about 40% of the larvae were in the pupal stage and 11% still in the larval stage that considerable codling moth activity can be expected for the next 15 days.

First larvae to enter the fruit full grown and beginning to leave apples. Numerous growers have removed the apples from trees unsprayed because of light crop. These apples should be removed once in order to prevent adults from emerging and infesting adjacent blocks of apples that are being sprayed.

Army worm larval infestations in the Vincennes area (Knox County) are lighter and much less frequent than in 1953 and 1954, even though adult populations earlier in the season were comparatively high.—D. Hamilton.

Grasshoppers, Armyworm Busy in Florida Areas

GAINESVILLE, FLA. — Grasshoppers of several species have caused considerable damage on ramie, the fall armyworm, with locust grassworm, caused heavy injury to para grass at the Everglades station. Garden fleahopper has been seen in considerable population and has injured ramie.

Various truck crops have been infested by celery looper, green cutworm, diamondback moth, leafhoppers, reports from the Everglades station say.—H. A. Denney.

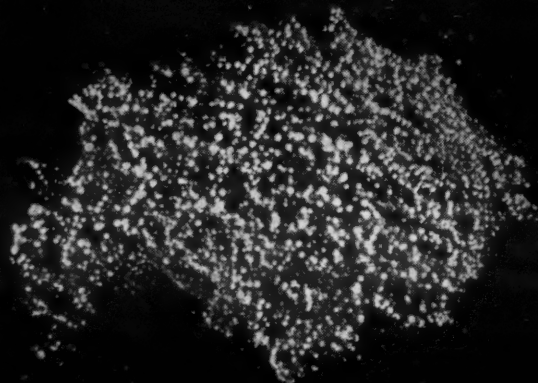
New Jersey Reports Many Species in State

NEW BRUNSWICK, N.J.—Codling moth activity is present and increasing throughout New Jersey. In southern New Jersey, peak of entry was occur near mid-June. Apple sawflies are leaving apples and causing considerable anguish to home gardeners in Bergen County. Red banded roller has pupated. Many European red mites seen in southern New Jersey are mature.

Orchards on good scab-spray schedules remain almost clean. One poorly sprayed block in a southern county showed about 10% scabbed fruit, another 1.5% fruit scab (showing ample possibilities for infection were present). Bergen County reports about 1% fruit infection in two orchards where incomplete schedules were used.

Peach curculio activity is apparently over in southern New Jersey and nearly so in upper New Jersey. Lesser peach tree borers have emerged throughout southern New Jersey.

European corn borer egg laying has been fairly heavy. The heaviest



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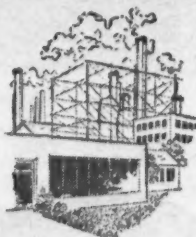
... is roughly one cubic foot of NITROGEN gas. Floating free in the air this nitrogen can't add to America's agricultural or industrial wealth. But Grace Chemical Company has opened a plant in Memphis, Tennessee, that "fixes" atmospheric nitrogen in the form of two very versatile compounds—ammonia and urea. (Shown in the photo are prills—tiny beads—of urea containing the equivalent to the amount of nitrogen gas between you and this page.)

Fixed in this way, nitrogen can enrich our crop farms, our livestock, and our homes—

through its use in fertilizers, feed supplements, and the manufacture of products ranging from toothpaste to television cabinets.

Output of the \$20,000,000 Memphis plant will be 72,000 tons of nitrogen a year. It will provide industry and agriculture these two forms of nitrogen from a dependable source—backed by a world of experience.

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ing is in south Jersey. Corn flea beetle has been active but less so than in 1954. Control has been good everywhere under recommended spray programs. Mexican bean beetle activity is increasing.

Alfalfa weevil defoliated many unsprayed fields and damaged some sprayed fields in southern New Jersey. Many growers have sprayed regrowth immediately after cutting and others are finding it unnecessary. Little bug adults are appearing and pea aphids are present on second-cutting alfalfa but they normally cause no damage.—Leland G. Merrill, Jr., and Spencer H. Davis, Jr.

Sugar Beet Webworms Do Damage in Colorado

FORT COLLINS, COLO.—Dr. L. B. Daniels, chief entomologist for the Colorado A&M College experiment station and chairman of the Colorado Insect Detection Committee, reports heavy infestations of sugar beet webworms in the Arkansas Valley. Previously reported in Prowers and Bent counties, the insect also is building up to serious levels in Otero County.

Sugar beet root maggots have shown up in scattered fields in Weld County, with all larvae in early stages. Insecticide treatments appear to be ineffective, Dr. Daniels said. While sugar beet leaf hoppers caused large damage to crops in western and southeastern Colorado, only small numbers have been reported in some areas of the western slope thus far.

The army cutworm is showing a steady and rapid buildup. Numbers of cutworm moths obtained in an Otero County light trap showed an increase from only eight on May 16 to 36 on May 7, 156 on May 20 and 56 on May 23. This increase is close to widespread reports of extensive damage to wheat by cutworms in eastern Colorado.

Psyllids continue to be a severe problem in eastern Colorado. On the western slope, however, the numbers are still low with the first adult psyllid taken in Mesa County on May 25. Dr. Daniels reports that the first corn ear worm was taken in Otero County during the week. Since this insect is migratory, its presence signals possible danger.

Fly numbers are increasing, especially in areas where there are favorable breeding spots. Breeding areas should be treated early in the season, the entomologist advised.

Mississippi Fights Cotton Fleahoppers

STATE COLLEGE, MISS.—Cotton fleahoppers are destroying pinpoint squares on young fruiting cotton, according to A. G. Bennett, extension entomologist. The entomologist pointed out that these early squares must be protected in order to set an early crop.

"Early set bolls are heavier than those set later," he stated. "It takes less of these to make a pound of seed cotton, and less to make a bale of cotton."

Fleahoppers are tiny insects (about 1/8 in. long) with sucking mouth parts. They cause the small squares to turn black or brown and drop off the plant. Three or four applications of poison at weekly intervals beginning when squaring starts will set an early crop, Mr. Bennett stated.

These early applications of insecticide will also destroy overwintering boll weevils.

Cool Weather Delays Iowa Borer Hatching

AMES, IOWA—Cool weather has delayed European corn borer egg laying and hatching over most of Iowa. All corn has heavy egg counts in some central Iowa fields. Maximum egg counts on tallest corn run up to eight per plant. Average counts range

from 10 to 200 per 100 plants on 20-40-in. corn. In general, it appears that about 10% of corn in central and northern Iowa is susceptible to heavy first brood borer damage.

Some field corn in southern Iowa and hybrid seed and canning corn in central Iowa have been sprayed. Peak control activity in northern Iowa will come June 20-30.

Grasshoppers at the rate of 10 young nymphs per square yard are preventing normal growth of second crop alfalfa in some fields in the southern half of Iowa.

Lesser clover leaf weevil adults are present now in red clover fields at rates of two per sweep.

Alfalfa loopers and caterpillars are present in alfalfa at 2-4 per square yard.

Pea aphids have suddenly built up in both red clover and alfalfa. Populations range from 50 to 100 per sweep and are heaviest in red clover. Cool weather favors increased activity by these pests.

Clay colored billbugs have destroyed corn in West Pottawattamie and Harrison counties. It usually attacks wheat and cattails. In corn it cuts off the corn plant.—Harold Gunderson.

North Carolina Expects Another Bollworm Wave

RALEIGH, N.C.—While one "wave" of bollworms has passed its peak, another brood can be expected in a month, state North Carolina State college of agriculture and engineering of the University of North Carolina.

The larvae go into the soil, change to pupa and in about a week emerge as a moth. The brownish moths lay eggs for the next brood. A third brood which overlaps the second brood by early August often is very destructive in late or rank cotton.

The boll weevil has not made its appearance so far in large numbers in but a very few fields.

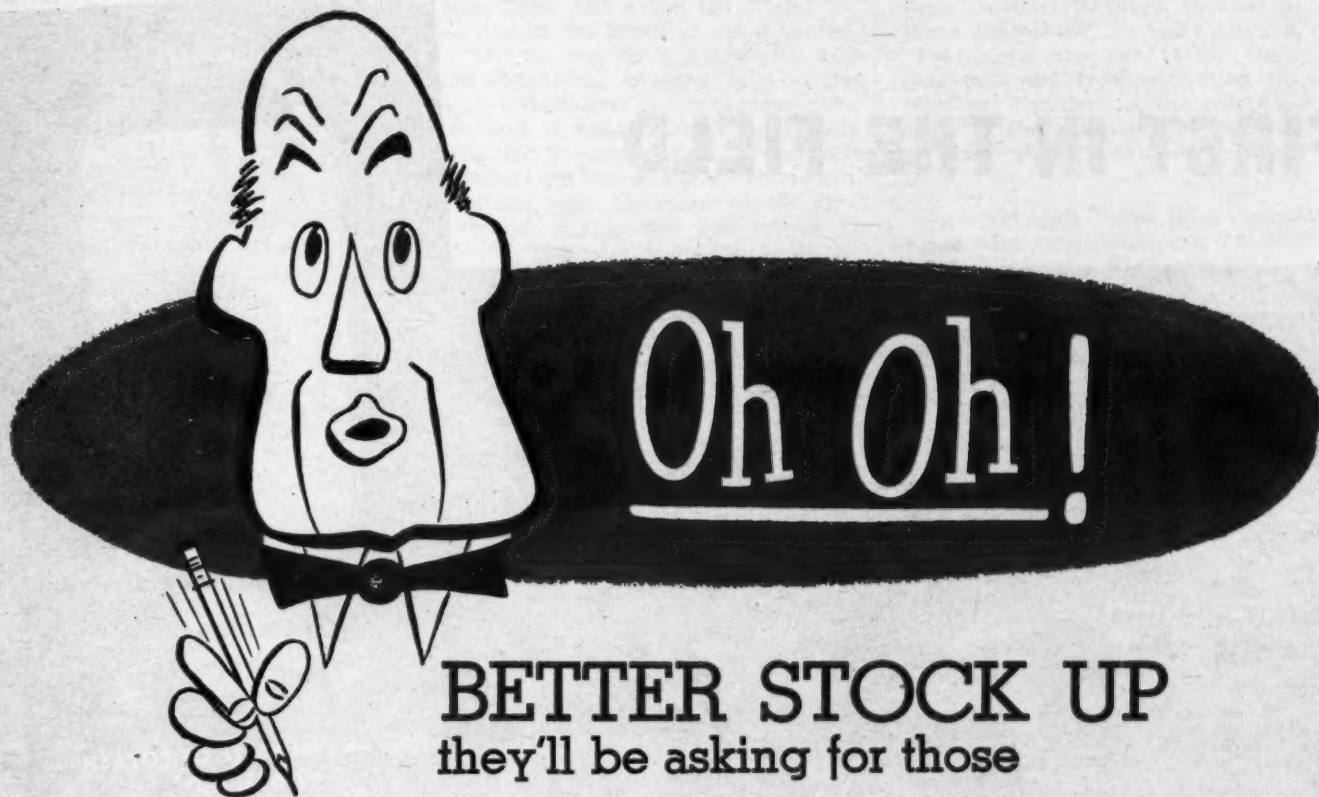
Thrips were causing serious damage to plants in Union County where the plants generally are fairly small. A range of four to 15 per plant was reported in one area. The damage to plants in Cleveland County is considered only moderate and in Halifax light. Scotland County fields showed almost the same populations as did Union (4-12) but the plants were large and were withstanding the attack.

Grasshoppers Spotted in Wide Areas of Illinois

URBANA, ILL.—Moderate to severe infestations of grasshoppers are being spotted throughout Illinois. Egg hatching is practically complete in the south half of the state and is well advanced in the north half, according to Illinois Natural History Survey and college of agriculture entomologists.

Cool, rainy weather has retarded corn borer development and winds and rains have killed some moths.

(Continued on page 17)



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PENCO ENDOTHAL* HARVEST AID

(Formerly called Penco Endothal Desiccant)

Excellent for drying legume seed crops and seed corn in the field.

Eliminates windrowing, field drying, reduces seed loss.

Permits earlier, controlled harvesting of more acres per day.

Allows direct combining of crops.

Is clean—won't stain hands or clothing; easy to apply.

(Write for Bulletin A-1)

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A magnesium chlorate type defoliant . . . dissolves quickly in water . . .

saves time . . . not acutely toxic or unpleasant to handle.

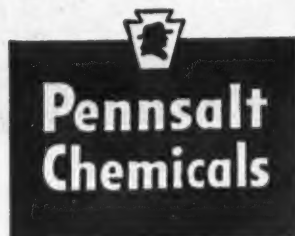
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(Write for De-Fol-Ate Bulletin)

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*Endothal is the accepted generic name for 3,6-endoxohexahydrophthalic acid. The manufacture and use of endothal products are covered by one or more of the following U.S. Patents: 2,550,494; 2,576,080; 2,576,081; 2,576,083; others pending.

FERTILIZER-PESTICIDE MIXTURES

(Continued from page 1)

trol these pests at reasonable costs for the materials. A number of these pesticides are compatible with fertilizers, and in some instances, the farmer can reduce labor costs by applying both fertilizers and pesticides in one operation.

"The quick solution to the problem would appear to be in putting the two compounds together and deliver the mixture to the farmer, but in practice this is not without serious objections and obstacles. This presents to the fertilizer industry a real and somewhat complicated problem," he pointed out.

In discussing "Fertilizer-Pesticide Mixtures in 1953-54," Dr. Jacob reported that although such mixtures have been used in the U.S. for "at least 25 years," it is only since 1948 that serious attention

has been given to developing the possibilities of their further use.

As to consumption, it has been estimated that use of fertilizer-pesticide mixtures in the U.S. and territories in the year ended June 30, 1953, totaled at least 87,000 short tons, he said. Based chiefly on information supplied by control officials, experiment station workers, and manufacturers, the total quantity of such mixtures used in the year ended June 30, 1954, is estimated at 149,100 tons or 71.4% more than the consumption in the preceding year.

"Besides a large actual increase in consumption, the figure for 1953-54 reflects more accurate information on the quantities used in the regions and their various units than was available for 1952-53," Dr. Jacob said. "Although liquid mixtures of fertilizers

and pesticides find some use, the data relate chiefly if not entirely to solid products, and it appears that fertilizer-insecticide mixtures accounted for at least 95% of the tonnage."

Increases were shown in all the regions except the West South Central and Pacific, it was pointed out. They ranged from nearly 15% in the territories to 2,030% in the West North Central region. "In quantity," he said, "the largest increases were in the West North Central region (40,600 tons, 2,030%) and the South Atlantic region (13,200 tons, 22%). Together, the latter two regions accounted for nearly 77.7% of the total consumption of fertilizer-pesticide mixtures in 1953-54 and for 86.6% of total increase over 1952-53."

Among the individual states and territories, the 1953-54 consumption is estimated to have been highest in South Carolina (30,000 tons), as was also the case in 1952-53. It was 10,000 tons or more in five other units (in

descending order): North Carolina, Iowa, Florida, Nebraska, Puerto Rico, and Hawaii.

Consumption of fertilizer-pesticide mixtures in the U.S. and territories in 1953-54 amounted to only 0.9% of the total consumption of mixtures of fertilizers, however. Among the regions, the proportion ranged from 0.01% in the West South Central to 3.2% in the West North Central, 3.5% in the territories, and 4.7% in the Pacific.

Only limited information is available on the total acreages of land receiving fertilizer-pesticide mixtures, Dr. Jacob said, but the most important crops so treated include corn, to control sand wireworm, corn rootworm and seed corn maggot; Irish potatoes, to control wireworms; pastures, to control white grubs; sweet potatoes, to control wireworms and flea beetles; snap beans, to control seed-corn maggot and cotton (sand wireworm), true (mole crickets), and lawns (white grubs).

"In 1953-54, as in the preceding year, the total quantity of insecticides applied in mixture with fertilizers far outweighed that of other pesticides (herbicides, fungicides, etc.) used in this way," Dr. Jacob told the group.

The addition of pesticides to fertilizers was mostly to mixtures containing two or more of the primary plant nutrients and chiefly to mixtures containing all three of the nutrients. In a few instances, however, additions to straight materials—including ammonium sulfate, triple and normal superphosphates, potassium sulfate and gypsum—were made. The quantities of admixed additives ranged from 1 to 30 lb. per ton of mixtures; chlordane, 0.25 to 10 lb. more; and DDT, 1.5 to 40 lb.

Growth Predicted

Fertilizer-pesticide mixtures are used in a number of foreign countries, among which are Canada, Great Britain and New Zealand, Dr. Jacob reported.

Looking ahead, he said that for the country as a whole, the outlook is promising for continued growth in the use of fertilizer-pesticide mixtures. Expanded consumption is expected in 32 of the states, especially those comprising the North Central region.

Mr. Harding, looking at the problem from the standpoint of the fertilizer manufacturer, pointed out seven basic problems involved in the mixing of fertilizers and pesticides. These problems sum up the opinion expressed by a cross-section of the industry contacted by Mr. Harding earlier.

He said that the main problems involve: (1) proper mixing; (2) analysis; (3) public relations; (4) product liability; (5) tags, labels and registration; (6) safety precautions and (7) frequency of changes occasioned by differences in grade and amount of pesticide required.

"Unless we can give our customer a product that we feel is properly mixed and one that will give uniform treatment of the soil, then in my humble opinion we should never take an order," Mr. Harding observed, then continued by saying that the commonly used insecticide materials should best be incorporated in a fertilizer used in liquid form by spraying the proper amount of insecticide on a weighed amount of fertilizer.

"This can be done in a batch ribbon type mixer," he said. "The insecticide material should be sprayed on the tumbling mix slowly and the mixer should make several revolutions after all the liquid has been introduced. Solid small granular material can also be mixed satisfactorily with the same type of equipment," he added.

Mr. Harding commended the conscientious work of fertilizer con-

FIRST IN THE FIELD



As the first producer of potash in New Mexico, the United States Potash Company is proud of the preference that the fertilizer trade has shown for its two products—

1. Higrade muriate of potash (62/63% K_2O)—tops in the trade for production of the new high analysis fertilizers.
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Officials who have seen the problem and have worked with members of the industry in a most cooperative manner.

Public relations could or could not be a problem, depending on the location of the individual plant, it was pointed out. "Fumes from the use of liquids, or dust from the use of solids, along with the pungent odor of some of these materials, could be the cause of neighborhood complaints," Mr. Harding said. "I can think of a few plants that I am quite sure would have troubles of this kind were they to undertake to make fertilizer-insecticide mixtures."

Product Liability

Product liability could be serious, or when a producer mixes these pesticides in his goods and guarantees the fertilizer, as well as the insecticide value, "he has the ball on his alley" and it could go in a number of directions. This fact alone, he stated, has a deterrent effect in mixing the two materials.

Tags, labels and registration for a small mixer shipping one or two grades within his own state, are relatively simple. But for the larger plant shipping many grades into several states, this problem becomes very complicated and the attaching of multiple labels and tags during a busy fertilizer shipping season is far from simple, Mr. Harding said.

As to safety precautions, he stated that great care is used in the handling and mixing. "Dust masks, rubber gloves, and other protective devices have been furnished; and so far, in no case, with our company, have men been exposed continuously for any great length of time," he reported.

"Change-over is a time-consuming operation that cannot be passed over lightly," it was noted. "A number of our industry members who were contacted stated that they have certain hours, or certain days, to make delivery of these mixtures; others confine their mixtures to one or two grades with one specified amount of pesticide. Others take them as they come and say it really disrupts their operations when they have several orders arriving at intervals in the same day and requiring varied analyses and mixtures."

"If our industry had any reasonable assurance that this practice were here to stay, for even several years, we could afford to install proper equipment—and eliminate most of the problems that now give us concern."

In a paper discussing product liability aspects of fertilizer-pesticide mixtures, John D. Conner, Washington, D.C. attorney and counsel for the National Agricultural Chemicals Assn., pointed out that despite the high potential benefit of both fertilizers and pesticides, use of both products is accompanied by a potential threat of injury or loss of a crop many times more valuable than the worth of the materials applied.

He pointed out that "product liability claims are not new to either the fertilizer or pesticide industries." However, the fertilizer industry has not been plagued with such a heavy volume of claims as has the pesticide trade, he observed, but added that when the fertilizer manufacturer undertakes to mix pesticides with his plant food products, "there may arise liability problems with which you are not familiar."

One of the hazards pointed out by Mr. Conner is that the precise manner in which a potential injury may arise cannot be foreseen. "The injury may be to plants grown in soil treated with the mixture shortly before planting, or the injury may arise in subsequent years from soil contamination resulting from application in earlier years," Mr. Conner said.

"The alleged damage may arise from the failure of the material to give adequate control, or it may arise from an off-flavor in the produce. It could arise because the use of the mixture resulted in a residue in the produce resulting in seizure under the Federal Food, Drug and Cosmetic Act. The damage could arise from personal injury to the applicator or to others in the environment in which the mixture is used or produced."

The attorney said that whatever the type of injury may be, it would arise in all probability because of one or more of three basic deficiencies which he outlined as follows:

"The first basic deficiency may be the failure to conduct adequate research prior to marketing the product to determine its capabilities and its limitations, and the manner in which it can be properly and safely used," he said. Even though this is thought to be the responsibility of the producer of the basic ingredients, yet, "when you market the product it becomes your responsibility," he declared. "You assume the obligation of knowing its capabilities and its limitations and of the possible pitfalls connected with its use."

The second basic deficiency Mr. Conner noted was the possible failure to use "adequate production controls or methods to assure that the product you actually produce and package accords with your standard product. The production of fertilizer-pesticide mixtures may well present production and control problems not encountered in normal fertilizer production."

The third basic deficiency may arise from a failure to label or advertise the product in accordance with statutory standards. "The federal and state pesticide laws contain stringent regulatory requirements, some of which have no counterpart in the fertilizer laws. It should be borne in mind that a failure to meet these statutory requirements may become the basis of a liability action," he warned.

Mr. Conner cautioned his audience of fertilizer people not to make the mistake of believing that "just because a fertilizer-pesticide mixture has been accepted for registration by both the pesticide and fertilizer control officials it thereby meets the regulatory requirements of both laws. Bear in mind that in a liability suit premised upon statutory violations, it will be the jury, not the regulatory official, who will determine whether your product met the statutory requirements."

Production Control

The attorney added, however that when injury occurs, the grower is often likely to decide the pesticide is the culprit, regardless of other considerations. "There is no reason to assume that fertilizer-pesticide mixtures will completely escape this suspicion," he added.

In view of this, Mr. Conner said, production control procedure must serve two functions: first, to assure that all batches of the material produced accord with the guarantee, and the second is to enable the maker to trace back and determine if there was any deficiency in the product, if it is later alleged to have produced injury.

Batch production records should be as complete and detailed as is practicable, he declared. As a minimum, he suggested that the batch production records should show not only the exact quantities of each ingredient which went into the batch, but also the initials of the employee who calculated and weighed the quantities.

"They should identify the source of all ingredients," Mr. Conner said. "If the ingredient containers bear batch numbers, these batch numbers should be recorded on the batch production records."

"All quantities produced should be

designated by batch number. It is not enough that the batch number indicate only the date and place of production. It should designate each separate batch produced even if there are identical consecutive batches produced. A representative sample should be retained from each batch for as long a period as is practicable.

"This period should not be shorter than the growing season of any produce on which this mixture might be used. It would be desirable that it be retained until the statute of limitations would have run on any injuries which may be alleged to have been caused by this mixture. In most cases, this would be three years from the date on which the mixture was applied."

Necessary Tests

"If the container of the questionable product is still available at the time the liability action arises, the answer is simple," he said. "All necessary tests can be performed with the retained samples from that batch. Frequently, additional packages from the same batch can be located in the hands of other users."

"If you ship to a distributor and the distributor, in turn, sells to the user, the problem becomes more complicated, of course. But even in this situation the designation of the batch numbers on the shipping documents covering your shipment to the distributor may enable you either to identify precisely or sharply limit the possible batches out of which the questionable product could have come."

Mr. Conner said that although some of these precautions are admittedly cumbersome, they are all based upon practical experience in investigating and defending liability claims which have arisen from the use of pesticides.

"Even if the precautions are observed, I cannot assure you that you will be immune from liability

claims," Mr. Conner concluded, but added that if and when they do arise, the defendant's chances will be greatly enhanced.

In his discussion on the state laws and regulatory policies affecting the sale and distribution of fertilizer-pesticide mixtures, Rodney C. Berry pointed out some of the difficulties encountered by control officials when the distribution of fertilizers is regulated by laws in 47 states and the distribution of pesticides by federal law and by laws in 41 states.

To bring about the most uniformity possible, he said, the associations of both fertilizer and pesticide officials, in cooperation with manufacturers, have drafted "model laws" to eliminate major differences.

The Virginia control official reviewed the laws regulating the sale of fertilizers, most of which have been in effect for many years, observing that much research and education has been conducted to make growers well informed about fertilizers. "Few farmers are apt to injure themselves, their crops or their livestock through the use of these materials," he observed. "Fertilizers are not highly toxic materials and laws regulating the labeling, distribution and responsibility of the manufacturer are not as strict as they are for pesticide laws."

Pesticide laws "have been enacted or amended during the past ten years and during this comparatively short period much uniformity has been accomplished through the cooperative efforts of control officials, manufacturers and experiment station workers," Mr. Berry said.

"Pesticides have been formulated to mitigate pests and have been formulated with compatible materials. The rate and correct time of application has been determined by careful experiments of entomologists and other scientific workers, and the

(Continued on page 10)



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GRAIN PROTECTANT

No Longer is New and Untried

For over 5 years WeevilDoom has been the answer to the grain infestation problem. A water-soluble spray, WeevilDoom is sold in a highly concentrated liquid form. No excessive freight costs for non-essential, bulky chemicals!

Easy to prepare! Dilute 1 part WeevilDoom to 15 parts water.

Easy to use! On the farm—apply to grain stream out of combine hopper at rate of 1 oz. to 1 1/2 bu. In the elevator—5 gal. to 1,000 bu. in the boot or auger.

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Use WeevilDoom in your elevator and sell it to your farmer customers. Don't risk discounts of up to \$1 bu. on government loans. Farm or elevator spray equipment available.

Easy to Apply! Safe! Economical! Positive Results!

WeevilDoom may be purchased from the following distributors:

Industrial Fumigant Co., 925 State Line, Kansas City, Mo.	Harold D. Hanson, Foley, Ala.
Sales Supply Co., Eaton, Colo.	Rocca-Curvi, Inc., 25 California St., San Francisco, Calif.

MID-WESTERN SPRAY-CHEMICAL CO. INC.
Hedrick 2338 P.O. Box 951 Mission, Kansas



Spencer Honors Farm Bankers

SPENCER SEMINAR—A group of farm representatives of banks, newsmen and officials of the Spencer Chemical Co. are shown in the top photo prior to leaving Kansas City by air for the company's Jayhawk Works at Pittsburg, Kansas. The occasion was a three-day bank farm representative seminar, in which bank farm representatives from seven states participated.

In the second row of pictures, John Hardimon, State Bank of Bement, Ill., is shown at the left, checking wheat growth. With him are A. C. Kamm (center), Platt County, Ill., farm advisor, and Bert Downey, farmer. Mr. Hardimon was the Illinois bank farm representative (FR) attending the Kansas seminar. R. M. Bird, Goodhue County National Bank, Red Wing, Minn., is shown on a visit to a cattle farmer in the right panel. Mr. Bird was the Minnesota FR delegate.

On-the-spot visits with farm customers are one of the principal chores of John Perrier, left, third row, FR with the First National Bank in Dodge City, Kansas, and Kansas FR delegate to the Spencer seminar. Farm service is a full-time chore for Warren Langfitt, manager of the farm service department of the Centerville (Iowa) National Bank, shown at the left in the third row, right hand picture. He is talking things over with Earl Brinegar, center, a tenant farmer, and F. L. Sawyers, right, the landlord and president of the Centerville National Bank. The boy in the picture is Mr. Brinegar's son.

The bottom row, left, shows Carl L. Cramton, left, Security Bank of Ponca City, Okla., visiting a farmer. Mr. Cramton was the Oklahoma FR delegate to the Spencer seminar. The Kentucky representative was Ryan Mason, First City Bank & Trust Co., Hopkinsville. He is shown (lower right) on a visit to a hog raiser's farm. Tony L. Westra, Northwest Security National Bank, Sioux Falls, S.D., another FR at the seminar, is not shown in the picture here. Full details of the Spencer seminar appeared in the June 13 issue of CROPLIFE, page 17.

Problems of Soil Fertility Approached With Fresh, Lively Vigor by NPFI Youth Panel

WHITE SULPHUR SPRINGS — One of the big hits of the preliminary National Plant Food Institute convention here last week was a youth panel which demonstrated that if the future of agriculture rests with the young farmers, it is indeed in safe hands.

The youths, representatives of the 4-H clubs, Future Farmers of America and the National Junior Vegetable Growers Assn., talked about and demonstrated the vital role of fertilizer with enthusiasm, poise and freshness rarely seen on a trade convention platform.

Here's how Lamar Ratliff, 15-year-old 4-H club member from near Baldwin, Miss., described how he produced 218 bu. corn—"all corn and no glue"—from one acre.

"Mr. Taylor Smith, my county agent, told me when I enrolled in the 4-H corn project in 1950 that if I would prepare a good seed bed, apply plenty of fertilizer and keep the weeds out, I could make 100 bu. corn on one acre. My Dad didn't believe this was possible because he had never fertilized corn and never made over 30 bu. on one acre but he was anxious for me to try and he has encouraged and helped me all the way through."

By following the fertilizer recommendations of his county agent and with the help of irrigation, Lamar reported he made 179 bu. corn on an acre in 1950 and "had about 50 visitors that year mostly local farmers and agricultural workers." The next year he made 187 bu., was given many honors and "had about 100 visitors."

"I still believed that I could make 200 bu. on that acre and Mr. Smith and my Dad began to believe that I might make it," Lamar said. He made 214 bu. in 1952, and had "over 300 visitors from several states that year."

"But shucks, I still wasn't satisfied," Lamar said. "I believed that I could make 300 bu. on that acre. I figured that if I could get 30,000 plants, one ear to each stalk, 100 ears to the bushel, that I could make 300 bu."

"Mr. Smith told me he thought I was getting too many plants, but to go ahead if I wanted to try it. I put 32,000 plants on that acre and that was too many. The sun couldn't get in and I dropped down to 165 bu. This was still high in the county though."

"You can see that disappointments happen in 4-H club work just as they do in everything else, just as they will all through life, but I still believed I could reach that 300 bu. goal. I was determined to try with 28,000 plants. We had another severe drought, but of course this didn't bother me like it did everyone else in the county because I had a 3-acre pond full of water."

"I irrigated seven times and made 218.5 bu. It was all corn and no glue. This was high in the state. I had about 500 visitors from all over the United States, Alaska, and Hawaii."

"I was disappointed because some Yankee farmer from Iowa beat me last year but he better stay on his toes because I still believe I can make 300 bu. on that acre and I'm trying again this year."

Another panel member, William D. Gunther, 20, Live Oak, Fla., national president of the Future Farmers of America, told the group that "soil building and a safe future for farming are two inseparable entities, and, in a more electrifying sense, soil building and

the future prosperity of our nation are inseparable."

"With millions of additional people expected to join us at the dinner table in the future, we boys, who will be operating the nation's farms a generation hence, must realize that it is imperative for us to know how to maintain, replenish and increase the productivity of the land," he said. "This means that we must protect and properly use every acre on every farm in the country."

"I think that most of our Future Farmers are aware of this challenge to our national security and of the close relationship that exists between soil building and the problem of maintaining a strong national economy. This awareness is a sign of progress in itself, for young people hold persistently to convictions made early in their lives."

"The sound land management principles we are learning and endeavoring to put into practice are nothing new. They are measures you have considered for a long time. The difference is that we, as young farmers, look at these methods in a fresh, new exciting way. We have much to learn and much to accomplish with what we already know. I believe that we can do it with people like you behind us."

Joe Strickland, 16, and Tommy Dotson, 15, both of Summerville, W. Va., told the convention that "if starved plants could only squeal like hungry pigs, we would pay more attention to their hunger needs."

They presented a demonstration on "soil fertility and improvement" as representatives of the National Junior Vegetable Growers Assn.

"Even though they (hungry plants) can't squeal, they have means of telling us of their plant food deficiencies which we will call hunger signs," Tommy and Joe pointed out with photographs showing a corn leaf deficient in nitrogen.

William B. Ward, president of the American Association of Agricultural College Editors, and head, Department of Extension Teaching and Information, Cornell University, panel moderator, said that "the science of farming requires trained farmers and there is no better place for training than in the youth organizations of our nation, the 4-H Clubs, Future Farmers of America, and the National Junior Vegetable Growers Assn."

"There are far too many farmers today who till their soil and plant their crops under a philosophy reminiscent of that old adage: It was good for Paul and Silas and it's good enough for me. Translated, this adage takes on increased significance when we consider the fact that farmers in virtually every state in the nation are using less than half as much fertilizer as their experiment stations recommend they could and should use with profit."

"To carry the analogy a little further, as manufacturers of fertilizers, you necessarily must rely upon our farm youth and their leaders to change this adverse picture of farming operations."

"Personally, and as a representative of one of our great land-grant universities, I am happy to see the recognition the fertilizer industry is giving to our young agricultural people. I am glad to see that you recognize our farm youth as our most important crop. It's one bountiful crop grown on American farms while no one suggests needs any price supports or parity ratios."

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Better Selling

A SPECIAL CROPLIFE DEPARTMENT TO HELP RETAILERS IMPROVE MERCHANDISING KNOW-HOW



TEXAS DEDICATION—Dedication of the Lone Star Experimental Farm by the Texas Farm Products Co., Nacogdoches, Texas, attracted over 1,000 persons who met and heard talks by some of the above personalities. Welcoming visitors was M. S. Wright, Sr., president and founder of the firm, seen on the left. In the second photo are shown (from the left): Joe Wright, vice president in charge of production for the company; Tom Wright, vice presi-

dent in charge of sales and credits, and Steele Wright, vice president and general manager. Perry Campbell, manager of the Lone Star farm and one of the speakers, is shown in the next photo. In the second last scene, Dooley Dawson, agricultural vice president of the Second National Bank, Houston, and principal speaker at the occasion, is shown at the microphone. The crowd lined up for the giant barbecue is shown in the final photo.

Virginia Dealer Finds Farmers Willing to Learn More About Proper Fertilizer Use, Results

By AL. P. NELSON
Croplife Special Writer

A complete fertilizer, feed and farm supply service offered to farmers within a radius of about 30 miles of Richmond, Va., is helping the Southern States Richmond Cooperative roll up a sizable volume of business—despite the fact that some parts of Virginia suffered very heavily from drouth in 1954.

George Roller, manager, reports that farmers who used the right recommendations of fertilizer achieved fair crops in semi-drouth areas. The general consensus of agricultural men in the area is that fertilizer helps plants to survive during drouth conditions and hastens recovery of crops when the rains come.

Soybeans are a cash crop in the Richmond area, states Mr. Roller and farmers have been using 0-14-14 and 2-12-12 fertilizers on land where they grow the beans. For small grains 5-1-10 and 2-12-12, for side dressing, have been in demand.

The rates charged by this firm for spreading fertilizer vary with the number of pounds used per acre. The distance from Richmond also makes a difference. Generally, the following rates apply: 1,000 lb. per acre, \$2.75; 750 lb. per acre, \$3.25, and 500 to 750 lb. per acre, \$3.75.

Southern States Cooperative has worked out seeding rates for emergency drouth pastures in cooperation with the agricultural colleges in the area.

These are:

"Mixture No. 1. One bushel each of seed oats, barley and rye, with 10 to 15 lb. domestic rye grass, or with 10 to 15 lb. crimson clover, or with 15 to 25 lb. hairy winter vetch. Application above for one acre.

"Mixture No. 2. Two thirds of a bushel each of seed oats, barley and rye, with 10 to 15 lb. domestic rye grass, or with 10 to 15 lb. crimson clover, or with 15 to 25 lb. hairy winter vetch. Rate per acre.

"Fertilizer. Apply 500 to 700 lb. 5-10-10 or 10-10-10 or another high nitrogen fertilizer per acre. If additional spring grazing is needed, top dress with 20-25 lb. nitrogen

per acre in late winter or early spring. . ."

The Richmond store has many educational meetings on fertilizers and insecticides, weed controls, etc., to which farmers of the area are invited. Mr. Roller reports that these meetings are usually very well attended and bring fine results. Farmers today want to know what fer-

(Continued on page 16)

Fertilizer Use Doubles Rice Yields on Land In Use 45 Years

STUTTGART, ARK. — When rice growing was in its prime 45 years ago on the Grand Prairie, few farmers would have believed their land would be capable of producing more than 50% larger yields per acre in 1955.

However, Fred Hillman of Stuttgart, Ark., who is rice farming the same land where he produced his first rice crop in 1909 cites this experience.

Mr. Hillman purchased 160 acres of prairie land in 1909. At that time the soil was highly fertile and the water level was less than 50 ft. Average rice yields during those early days on his farm were 60-65 bu. per acre—an average yield in the county.

Mr. Hillman rotated his land, but did not use commercial fertilizer until about three years ago. In January, 1953, he was assisted by Roy L. Sanderlin, county agent, in having his soil tested by the University of Arkansas Soil Testing Laboratory.

The soil test revealed that the organic matter and nitrogen was low-medium and that potash and phosphate were very low. Fertilizer recommendations made by the soil testing laboratory were followed by Mr. Hillman with good results that year.

In 1954 on one particular field, Mr. Hillman applied 100 lb. 60% potash and 100 lb. 48% phosphate and 100 lb. anhydrous ammonia to the rice crop. When the crop was harvested from this field the yield amounted to 124 bu. per acre green weight.



SHOP TALK

OVER THE COUNTER

FOR THE DEALER

By EMMET J. HOFFMAN
Croplife Merchandising Editor

It is to the credit of the super market people that they are alive to change and sensitive to consumer demand. They have uncovered—like they have so often in the past—a new merchandising opportunity and they're going "full steam ahead."

Established farm chemical dealers ought to take note and make their plans accordingly because this new merchandising opportunity is open to them as well as to super markets.

Surveys show that perhaps 75% or more super markets stock insecticides for garden pest control. Seeds are carried by over 70% of all supers. Bulbs are stocked by 35% and plants by over 20%.

Fertilizer fungicides, garden and yard supplies, waterers, sprinklers, garden books, tools, window boxes, etc., are found in many, many super markets. These super market operators realize the attractive profit advantages offered by these items.

The farm chemical dealer must realize the attractiveness of super market shopping: Ample parking, long store hours, ease of shopping, attractive displays and ready availability of a wide variety of garden and farm chemicals and supplies.

It is claimed that there are many super markets which have already increased their retail sales in garden fertilizers, insecticides and other garden items as much as 400% without expanding the original floor space.

The super operators have found that sales of insecticides, animal pest controls and weed killers are fairly heavy all year around, although the best months for weed killers are March through September. March through June are the heaviest months across the country for bulbs, seeds, plants and nursery stocks. Bulb sales expand again during September and October.

One major supplier which devotes its sales and creative efforts exclusively to the super market trade, believes that in the next four years, the supers will capture the largest single percentage of all garden items in the U.S.

Established farm and garden chemicals dealers must be awake to this



By RAYMOND ROSSON
County Agent,
Washington County, Tenn.

CASUALTIES . . .

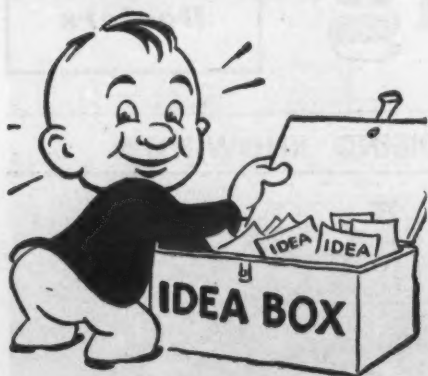
Any business man who does not cultivate a crop of public relations. . . Any business whose employees are not loyal to that business. . . A farming community not organized by its own people. . . A beef or dairy cattle farmer without an abundance of good pasture and legume hay. . . A country boy or girl not taking part in 4-H Club work. . . A forest fire. . . Any job you might have if you are not interested in it. . . A church that is not interested in all the young people in the community.

A field planted with poor seed. . . And not enough of nitrogen, phosphate and potash to produce a maximum yield. . . Any boy or girl who does not learn how to work with the hands. . . An acre of land that isn't sweet. . . A

(Continued on page 16)

Better Selling

Richer Sales Fields for Dealers



What's New...

In Products, Services, Literature

You will find it simple to obtain additional information about the new products, new services and new literature described in this department. Here's all you have to do: (1) Clip out the entire coupon and return address card in the lower outside corner of this page. (2) Circle the number of the item on which you desire more information. Fill in your name, your company's name and your address. (3) Fold the clip-out over double, with the return address portion on the outside. (4) Fasten the two edges together with a staple, cellophane tape or glue, whichever is handiest. (5) Drop in any mail box. That's all you do. We'll pay the postage. You can, of course, use your own envelope or paste the coupon on the back of a government postcard if you prefer.

No. 6261—Ant Powder

A consumer package of ant powder containing dieldrin has been announced by J. T. Eaton & Co., Inc. The package, which is a circular hand-squeeze applicator, weighs 3 oz. and its trade name is Rough and Ready ant powder. To secure more details about this product check No. 6261 on the coupon and mail it to Croplife.

No. 6162—Sprayer

A heavy-duty sprayer, called by the trade name, Hy-Row sprayer, has been developed by the O. W. Kromer Co. The sprayer features a 25 h.p. driving engine and is said to be suitable for cotton and tobacco spraying, as well as corn borer control and all types of custom spraying. It has a heavy-duty low-speed tractor transmission which allows continuous operation in all speeds. The clutch is a Rockford disc oil clutch. The tank and booms are claimed to be resistant to corrosion and rust from all spray chemicals and concentrated fertilizers. The tank has a 225-gal. capacity. Booms are raised and lowered automatically by a hydraulic

pump. A 3.6 h.p. auxiliary engine provides mechanical agitation and drives the 2-cylinder piston pump, which produces 9 gal. per minute at 400 lb. pressure. To secure more complete information check No. 6162 on the coupon and drop it in the mail.

No. 6259—Nitrogen Solution Pump

The John Blue Co. has recently announced production of its new nitrogen solution pump, model "NSF". This pump is fully enclosed and has approximately 2½ times the output of the "NSC" which it supersedes. The pump is ground driven and, when mounted on one of the Blue trailer type rigs (such as the Nitro-Shooter series "20-NS") up to 75 gal. of solution per acre may be applied when fertilizing four 40-in. rows, the company announcement states. The pump is designed for use with both non-pressure and pressure solutions (including aqua ammonia). All working parts operate in a bath of oil inside an inclosed, dust tight crankcase. A "double lip seal" protects the crankshaft from solution and prevents contamination of oil, it is claimed. The pumping end is constructed of non-corrosive materials such as stainless

steel and aluminum. To secure more complete details check No. 6259 on the coupon and mail it to Croplife.

No. 6169—Seed Treatment

A new six-page folder on how to treat seed with Heptachlor has been published by the Velsicol Corp. The folder, which is free upon request, demonstrates how Heptachlor is used, when to treat seed, how to treat seed, and points out special advantages of Heptachlor for seed treatment. A table shows the rates of application for standard Heptachlor formulations for wireworms, seed corn maggots, southern corn rootworm and sugar beet root maggots. According to the information in the folder, the product insures protection of cucumber seeds, corn, beans, oats, wheat, onions, sugar beets and other seeds. The folder is available by checking No. 6169 on the coupon and dropping it in the mail.

No. 6270—Nitrogen

New literature has been prepared by the Grand River Chemical Division of Deere & Co. on its new product, Vitrea. The literature describes the product as being composed of "45% nitrogen fertilizer from urea." Prilled into a bead-like shape, the product is called "non-caking" and "free flowing." One folder contains recommendations for its use on rice with sections devoted to its use in Texas, Arkansas, Louisiana and California. Another folder has recommendations for its use on corn, sorghums, small grains, pastures, grass crops, cotton and sugar beets, the number of pounds to apply and common methods of application. Secure the literature by checking No. 6270 on the coupon and mailing it to Croplife.

Also Available

The following items have appeared in the What's New section of recent issues of Croplife. They are reprinted here to help keep retail dealers on rotational circulation informed of new industry products, literature and services.

No. 6167—Insecticide Bulletin

Prentiss Drug & Chemical Co., Inc., has just published an information bulletin on Prentox Pyronyl "75", an oil-free pyronyl concentrate. The bulletin states that the product is a new development in the field of pyrethrum insecticides, "incorporating the rapid killing power and complete freedom from toxicity of pyrethrum and the stabilizing and insect repellent activity of piperonyl butoxide. It

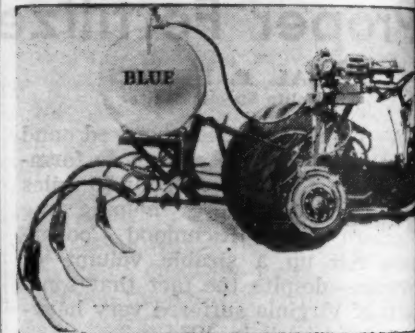
contains no kerosene, no odorless base oil, nor any other solvent." The most important area claimed for the use of Prentox Pyronyl "75" will be in the field of grain protection. It provides a method whereby a grain protectant entirely free of oil may be applied directly on the grain. To secure the bulletin check No. 6167 and mail it to this publication.

No. 6164—Crabgrass Film

A new slide film in sound and color titled, "Prevent Crabgrass and Other Weeds with Crag Herbicide-1" is now available. This 7-min. film will be lent without charge by Crag Agricultural Chemicals, Carbide & Carbon Chemicals Co., a division of Union Carbide & Carbon Corp. To secure the film on loan check No. 6164 on the coupon and mail it to this publication.

No. 6252—NH₃ Applicator

The John Blue Co. has recently announced the addition to its line of a new series of tractor mounted anhydrous ammonia applicators for use with rear mounted tool bars. Tanks (with capacity up to 100 gal.) are mounted directly on the tool bar. The Blue metering pump is mounted directly over the rear axle housing where it is accessible to the operator. The firm's line of applicators includes the spring time which is suitable for



side dressing and top dressing requirements and the more durable spring trip shank, which is suitable for tougher ground. Available for the first time is a line of rigid, truss frame type shanks for tough soil conditions where excessive deflection is a problem. These applicators will fit any size tool bar from 1½ inch to 2½ in. Tractor mountings are also available. To secure more complete information check No. 6252 on the coupon and mail it.

No. 5163—Gross Bagger

A new two-color data sheet, offered by the Richardson Scale Co. describes and illustrates the company's manually-operated gross bagger. Equipped with an automatic cut-off device, this recently-developed bagger scale fills and weighs either textile or multi-wall paper bags in capacities of 50 to 140 lb. To secure a copy of the data sheet check No. 5163 on the coupon and drop it in the mail.

No. 6254—Insect Display Box

An insect display box designed by an entomologist to aid in the identification of common cereal pests is offered by the Mid-Western Spray Chemical Co., Inc. Produced by the Bio-Preparations Co., the box is 8 in. wide, 12 in. long and 2 in. deep. It contains 12 detailed and enlarged color drawings of these pests in the adult and larval stages. Three actual specimens of each pest are mounted on pins in the box. Insects shown include the rice weevil, granary weevil, lesser grain borer, the saw-toothed grain beetle, and goudmols grain moth, Indian meal

Send me information on the items marked:

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| <input type="checkbox"/> No. 5163—Gross Bagger | <input type="checkbox"/> No. 6254—Insect Display Box |
| <input type="checkbox"/> No. 5164—Bag Opening Device | <input type="checkbox"/> No. 6255—Chemical Booklet |
| <input type="checkbox"/> No. 5175—Fly Control | <input type="checkbox"/> No. 6259—Pump |
| <input type="checkbox"/> No. 6164—Crabgrass Film | <input type="checkbox"/> No. 6260—Meter |
| <input type="checkbox"/> No. 6167—Bulletin | <input type="checkbox"/> No. 6261—Ant Powder |
| <input type="checkbox"/> No. 6168—NH ₃ Hoses | <input type="checkbox"/> No. 6162—Sprayer |
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| <input type="checkbox"/> No. 6252—NH ₃ Applicator | <input type="checkbox"/> No. 6270—Nitrogen |

NAME

COMPANY

ADDRESS

CLIP OUT—FOLD OVER ON THIS LINE—FASTEN (STAPLE, TAPE, GLUE)—MAIL

FIRST CLASS
PERMIT No. 2
(Sec. 34.9,
P. L. & R.)
MINNEAPOLIS,
MINN.

BUSINESS REPLY ENVELOPE

No postage stamp necessary if mailed in the United States

POSTAGE WILL BE PAID BY—

Croplife

P. O. Box 67,

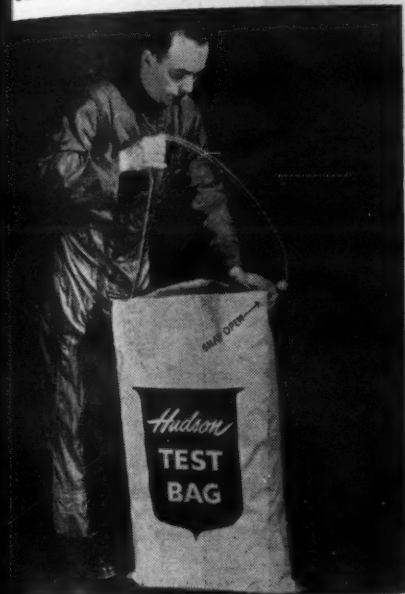
Reader Service Dept.

Minneapolis 1, Minn.

both, flat grain beetle, confused flour beetle, yellow meal worm, black carpet beetle and the cereal mite. Because of the small size of the mite, actual specimens are not included. The device is adaptable for display in elevators and farm stores where fumigants are sold and for educational purposes in schools and industrial plants. To secure price and other information please check No. 6254 on the coupon and mail it.

No. 5164—Bag Opening Device

The Hudson Pulp & Paper Corp. has announced a new multiwall bag feature, called by the trade name, "Snap-Open Sack." "Bag users will be able to open multiwalls with a quick snap of the wrist," a company spokesman said. The quick-opening device, on which a patent has been applied for, is achieved by placing



a series of small perforations in one corner of the bag under the tape and near the sewing line. By grasping the tape at this corner and pulling sharply upward, an opening is instantly started. It can be stopped and held at any point convenient for controlled spout pouring. The bag is available in both open-mouth and valve types. Check No. 5164 on the coupon, clip and mail it to secure more complete details.

No. 5138—Pump

Maintaining a constant volume of flow despite fluctuations in water pressure is the function of a new variable cavity pump built by Hypro Engineering, Inc. When the pressure in the pump reaches a predetermined point, a spring loaded end plate moves outward, increasing the length of the pump cavity and enlarging the clearances between the ends of the rotor and the end plate varying the pressure. To secure more complete details about this pump check No. 5138 on the coupon and mail it.

No. 6255—Chemicals Booklet

Its family of chemical products for agriculture are depicted in words and pictures in a booklet, "The Story of the Chemicals You Live By," published by the Diamond Alkali Co. The booklet, in its fourth edition, contains 24 pages and one entire section is devoted to herbicides and insecticides manufactured by the company. The booklet is available without charge. Check No. 6255 on the coupon and drop it in the mail.

No. 6168—NH₃ Hoses

Manufacturers and users of anhydrous ammonia as fertilizer have available three new types of hose manufactured by the Thermoid Co. Amoflex type No. 1 for bulk loading is made in 1½, 1¾ and 2 in. ID sizes and handles working pressures of 350 to 400 psi—available in 50-ft. lengths only. Amoflex type No. 2 for handling anhydrous ammonia in delivery and storage up to 350 psi is

manufactured in ½ in., ¾ in. and 1 in. ID sizes—available in long lengths. Amoflex type No. 3 for applying ammonia from portable field tanks made in ¾ in. and 1 in. ID—is also available in long lengths and permits working pressures up to 150 psi. To secure more complete information check No. 6168 on the coupon and mail it to this newspaper.

No. 5175—Fly Control Products

The special products division of Mutual Products Co. has announced a new line of fly control chemicals. All products in the line carry the name of SK Surekill Brand. They are available in one, five and 53-gal. metal containers with tamper-proof pouring spouts. The 55% Malathion concentrate is available in pint bottles. For those who prefer to use Malathion in a granular form, five, 10 and 25-lb. moisture-proof packages are available. National distribution is planned. Secure more complete details by checking No. 5175 on the coupon and mailing it to this newspaper.

No. 6260—Moisture, Fertility Meter

A new descriptive catalog is offered by Industrial Instruments, Inc., on soil moisture measurement and irrigation control. The catalog describes in detail the various methods of soil moisture and fertility measurements based upon the electrolytic conductivity principle as developed by Dr. George Bouyoucos. The publication also lists the necessary equipment for the various tests and controls, including the Bouyoucos cells, moisture meter and irrigation controller, etc. The catalog may be obtained by circling No. 6260 on the coupon and mailing it to this newspaper.

No. 6251—Row Planter Attachment

The E. S. Gandrud Co., Inc., announces that its new row planter attachment eliminates mixing of insecticides with fertilizer and applies dry granular insecticides during planting. The attachment mounts on either 2- or 4-row planters. Designed



to mount between seed cans, the unit delivers metered quantities of dry granular chemicals to the fertilizer boots through flexible metal tubes. Adapters connect insecticides and fertilizer tubes. A split sprocket clamps to the fertilizer drive shaft to drive the chemical applicator. A gauge on the chemical hopper allows setting of various application rates. Secure more complete details by checking No. 6251 on the coupon and dropping it in the mail.

Entomologist Named

STATE COLLEGE, N.M. — John Joseph Durkin of Yuma, Ariz., has joined New Mexico A&M's Agricultural Extension Service staff as extension entomologist. He succeeds Dr. R. C. Dobson who is now state entomologist with the New Mexico Plant Quarantine Service. Mr. Durkin obtained both his B.S. and M.S. degrees in agricultural economics from the University of Arizona. He was assistant research entomologist at the University from June to September, 1954, during which time he obtained considerable practical experience in the screening of insecticides for use against insects and mites in cotton and alfalfa.

North Carolina Firm Finds Personal Calls Helpful

Although Parker Brothers & Co., Raleigh, N.C., is over 80 years old, the descendants of the founder, M. A. Parker, do not rely entirely on tradition to help them get volume fertilizer business in this predominantly tobacco region.

The present day Parkers—M. D. Parker, L. M. Parker, Jr. and W. M. Parker, spend a great deal of their time out in the territory visiting tobacco and other farmers and talking over fertilization problems. Mostly the talk goes to the idea of an increased application of proper fertilizer per acre as a sound business investment.

And since tobacco acreage is restricted at the present time, the North Carolina raiser is interested in making his tobacco acreage produce as much as possible.

Last year, Parker Brothers & Co. built a large concrete and steel warehouse, 75 ft. by 176 ft. on the outskirts of Raleigh and moved into it from a crowded downtown location. The new site has plenty of parking space and ample storage space for more than 1,900 bales of cotton. The firm also has two other warehouses available for storage needs.

Most of the tobacco in this area is raised by small acreage farmers, states W. M. Parker. On a five acre strip of land the average farmer can raise enough tobacco to make a fair living at present day prices. This much land will keep a farmer and his wife busy all year around.

The analysis of fertilizer used by many tobacco raisers in this region is 3-9-6 and 4-8-10. The Parkers on their many calls to tobacco raisers constantly try to sell the value of a 4-10-10 fertilizer.

"With these farmers we find we can do our best educational work through personal calls," states Mr. Parker. "Because the acreage is small we can usually find the farmer close to the premises when we call, and so we have a high percentage of fruitful calls. However, we do use some direct mail and newspaper advertising to publicize the merits of our fertilizers and insecticides."

The larger tobacco raisers apply fertilizer by the drilling method while small users frequently broadcast it by hand, reports Mr. Parker. The firm also sells insecticides and fungicides. Some airplane pilots who specialize in dusting purchase their supplies from the Parker firm.

In recent years, too, the control of nematodes has engaged the attention of many tobacco growers. Soil fumigation to treat for nematodes is now practiced in much of the region served by the Parker firm.

The owners of the company report that just as tobacco raisers are now fully sold on control of tobacco varieties to be planted and over the ground level spraying, they are now more inclined to go all the way and protect the entire plant through adequate soil fumigation.

The merchandising of fertilizers has progressed far since the 1880's, the Parkers show interested persons a collection of old notes, dating back to 1883. One of these shows that a customer exchanged 80 lb. middling cotton for two sacks of ammoniated phosphate.

In its new modern warehouse, the Parker firm has a large office area on the second floor of one section, and it also has a new modern cotton sampling room. This latter room is equipped with special lighting and equipment to make sample testing accurate and convenient.

Just scatter
this bait
as you
walk



and kill
flies



A dry granule bait—kills both resistant and non-resistant house flies.

New, easiest way ever to control house flies in and around barns, poultry sheds, out buildings, stables, garbage disposal areas, drive-in restaurants.

Simple as shaking salt — Open the shaker can and scatter lightly around fly feeding areas.

Fast! You can bait several hundred square feet in 2 or 3 minutes.

Effective! This attractive-type bait lures flies, they feed and die.

Low cost, too! One pound covers 2,000 square feet of fly feeding areas.

Space spray gives rapid knockdown

ORTHO Fly Spray is an ideal space spray which gives quick kill on contact and provides excellent control of the lesser house fly.

On all chemicals, read directions and cautions before use.

World leader in scientific pest control

ORTHO
SCIENTIFIC PEST CONTROL

T. M. REG. U. S. PAT. OFF.: ORTHO

CALIFORNIA SPRAY-CHEMICAL Corp.
(Offices throughout U. S. A.)

BUG OF THE WEEK

Mr. Dealer--Cut out this page for your bulletin board

Stink Bug



How to Identify

Several species of stink bugs do damage of economic importance. The one shown above, the Conchuela, has a yellowish edge around its body. In the center is shown the adult of the species; at the left, the 4th stage nymph and at the right, the 3rd stage nymph.

Damage Done by Stink Bug

Several species of this insect damage alfalfa severely. They suck the juices of the plants thereby stunting and deforming them. They damage the seed heads of alfalfa and reduce the amount of seed that could be harvested otherwise. Full seed crop potentials cannot be realized unless the pest is controlled. Other stink bugs attack and severely damage cotton in all areas where it is grown. They feed largely on bolls and seldom invade cotton fields in large numbers until the plants are fruiting. They insert their needle-like beaks into the bolls and suck the juice from the immature seed. These punctures may cause the shedding of young bolls. Small bolls become soft, turn yellowish and fall off. Punctured bolls not thrown off by the plants, may show injury varying from a slight stain in one lock of the mature boll, to what is termed an "unpickable" boll, or one in which every lock has been punctured.

Habits of Stink Bug

Eggs of stink bugs are laid in the stems of plants. These eggs hatch into small, rounded, blackish nymphal stink bugs that lack wings. Within three or four weeks, they develop into full-grown stink bugs, capable of laying more eggs. There are usually several generations each year. Adults of the last generation spend the winter under leaves and trash on the surface of the soil.

Control of Stink Bug

Both sprays and dusts have been variously recommended for control of this pest. Toxaphene in either form at the rate of 6 lb. an acre, technical, will give control; chlordane 1 lb. an acre, dust or spray; $\frac{1}{2}$ lb. actual heptachlor in 100 gal. water an acre; BHC, 3% gamma isomer plus 5% DDT and 40% sulfur; a dust containing 15% toxaphene plus 5% DDT and 40% sulfur may also be used at the rate of 10 to 15 lb. an acre. USDA says that two treatments with sprays made from emulsion concentrates have given effective control; BHC to give 0.4 lb. gamma isomer an acre and BHC 0.3 lb. gamma isomer plus 0.75 lb. DDT an acre are likewise effective.

Drawings of Stink Bug furnished Croplife through courtesy of Hercules Powder Co., Wilmington, Del.

Previous "Bug of the Week" features are being reprinted in attractive 24-page booklet, priced at 25¢ single copies; reduced rates in quantities. Write Croplife Reprint Dept., Box 67, Minneapolis 1, Minn.



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FARM SERVICE DATA

Extension Station Reports

Mississippi State College reports that a farmer who has successfully applied most new but proven methods they appeared is J. H. Fly of near Belzoni, who planted over 800 acres of cotton in 1954. Elmo Hill, county agent, of Belzoni stated that Mr. Fly based upon the latest findings of agricultural research.

Mr. Fly tried irrigation for the first time last year. And like quite a few other growers, he started late. He began making his first two-inch application to 165 acres on July 25. He used the sprinkler method. A nearby lake supplied the water. Forty of the 165 acres were irrigated three times, and the remaining 125 acres were irrigated twice.

The average yield for the entire irrigated area was 600 lb. lint per acre, compared to 332 lb. lint per acre for cuts on either side which received identical treatment except for the water. The long summer drought was severe in the Belzoni area, as it was over most of Mississippi and the Mid-South.

Mr. Fly's cotton irrigated three times averaged 652.5 lb. lint per acre. That irrigated twice averaged 549 lb. lint per acre. On the 165 irrigated acres, the squares and small bolls mostly shed off when he started to apply the water, Mr. Fly said. He considers that he practically started over with helping this crop set fruit.

"I want to eventually water every plant that I plant," he declared. Subirrigation is needed on most of his sandy cotton land, he figures, and he has been following this practice. About 90% of his land is sandy loam. As a result of soil testing, Mr. Fly started a liming program at the rate of two tons per acre. Tests showed that the pH of his soil ranged as low as 5.1.

To fertilize his cotton, he applies 100 lb. actual nitrogen per acre in the form of anhydrous ammonia. In addition, on his lighter soils, he applies 500 lb. of 20% superphosphate. He also uses 150 lb. per acre of 60% muriate of potash on some of his land.

He practices a complete poisoning program to control cotton insects, starting with two early treatments for thrip control. Giving cotton land a rest by retiring it for as long as five years from cotton and planting a seeding cover crop pays, he believes. Good reseeding crops for this include lespedeza and Laredo peas, he stated.

★

Fertilizer with nitrogen is usually the best way to boost pecan yields because this is the nutrient most likely to be lacking in pecan orchards, says John A. Cox, horticulturist with the Louisiana State University Agricultural Extension Service. The nitrogen can be applied either in spring or fall, he said. It is readily absorbed by pecan trees during the same time it is applied.

★

The way fertilizer is put in the soil is often as important as the kind of fertilizer used on flue-cured tobacco, according to G. R. News, associate agronomist at the Virginia Polytechnic Institute. He says this is especially true if a dry spell follows immediately after planting.

Many growers make the mistake of laying off a shallow row, putting in the fertilizer, and then throwing up a low list.

Under such conditions, the roots of the newly set plants are generally placed directly in the fertilizer. If dry weather follows fertilizer often injures and causes many plants to die or stunt, Mr. Mathews said. The result is an irregular crop that is

hard to cultivate, more trouble to harvest and cure, and is poor in quality and low in yield.

There are two recommended methods of placing fertilizer for flue-cured tobacco—band placement and deep placement.

★

T. M. Waller, Mississippi State College extension cotton specialist, has this word of advice for farmers: "It is not how much you know about growing cotton, it is how you manage the timely application of your experience plus the application of new research findings throughout the growing season that will determine higher net results."

★

A study conducted by the Agricultural Economics Department of

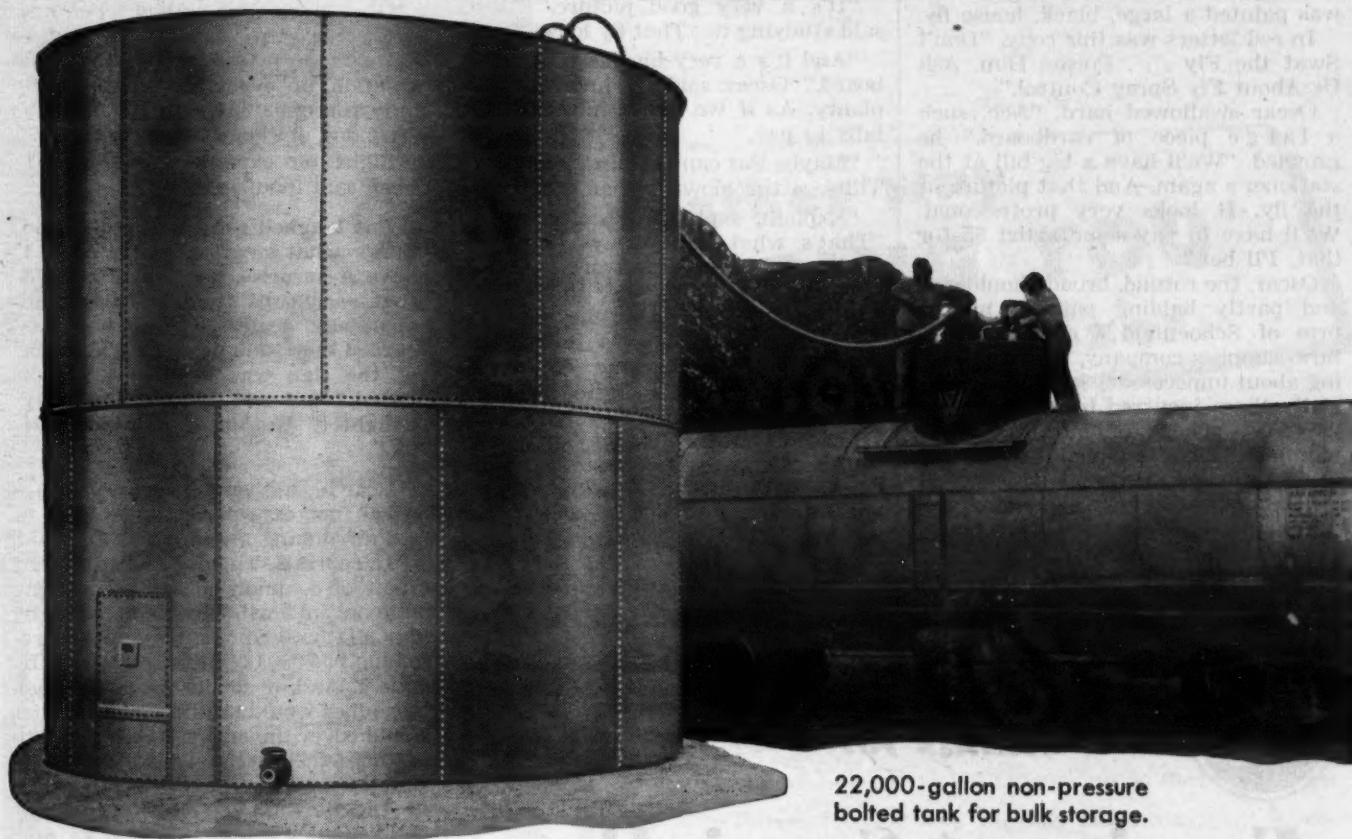
the South Carolina Agricultural Experiment Station concerning production practices and costs for improved pastures in South Carolina has recently been completed.

It is pointed out that good pastures involve considerable cost and that their economic success depends upon good management by the farm operator. He must see that they are limed and fertilized properly, mowed frequently and properly stocked.

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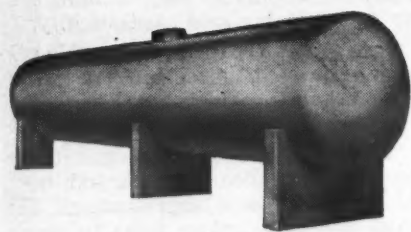
"The age of change in fertilizer practices is just beginning," says Dr. Gaylord M. Volk, soil chemist with the Agricultural Experiment Stations at the University of Florida.

"Research on crop production is far behind the industrial production of new materials now offered by the fertilizer industry," Dr. Volk said.

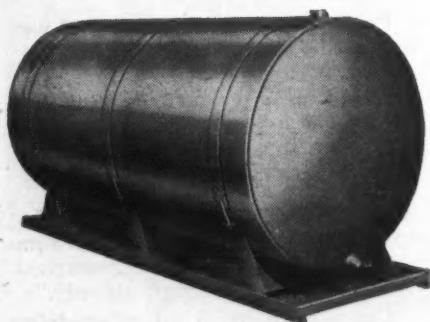


22,000-gallon non-pressure bolted tank for bulk storage.

BUTLER offers 3 ways to profit from liquid nitrogen bonanza



Welded low-pressure tank for bulk storage. In 12,000 and 22,000-gallon capacities.



Welded low-pressure skid tank for on-farm storage. In 500, 830, and 1000-gallon capacities. Other (without skids) from 100 to 1000 gallons.

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CROPLIFE, June 20, 1955—1

CROPLIFE,



When Oscar came to work very early that morning—he always made a point of beating everyone else by fifteen or twenty minutes—the first thing that met his eye was a large white cardboard sign hanging on the wall near the wrapping counter. This white cardboard sign was about five feet high and six feet wide, and on it was painted a large, black, house fly.

In red letters was this copy, "Don't Swat the Fly . . . Poison Him. Ask Us About Fly Spray Control."

Oscar swallowed hard. "Ach, such a large piece of cardboard he growled. 'We'll have a big bill at the stationer's again. And that picture of the fly. It looks very professional. We'll have to pay some artist \$5 for that, I'll bet.'"

Oscar, the rotund, broad-shouldered and partly balding partner in the firm of Schoenfeld & McGillicuddy, farm supplies company, was still fuming about unnecessary expenses, especially those incurred by irresponsible partners, when Tillie Mason, the plumpish, ulcer inclined bookkeeper came to work.

"Oh, no, not again," she exclaimed. "You and Pat can't be fighting so early in the morning."

"If he was here I would be fight-

ing with him," snapped Oscar, walking up and down, his hands folded behind his back. "I suppose he's home sleeping late—as usual. And look at that sign. Another foolish promotion idea. Flies—Pat thinks it takes crazy signs like that to sell fly spray."

"It's a very good picture," Tillie said studying it. "That fly looks real."

"And it's a very big piece of cardboard," Oscar said. "I know it cost plenty. As if we didn't have enough bills to pay."

"Maybe Pat can explain," suggested Tillie, sitting down at her desk.

"Explain, explain!" needled Oscar. "That's what he's always doing. If he'd spend more time working—ach, what's the use!" He went to his desk and began looking over the mail.

About an hour and a half later, Pat McGillicuddy came to work. There was a gay look in his blue eyes. "Ah, Oscar me boy," he said. "How do you like the fly sign?"

"Another way to waste money," Oscar commented caustically. "We've got so much we don't know what to do with it."

"Come now," Pat said patiently. "You know you don't mean that. And

we do want to sell more fly spray, don't we?"

Oscar said nothing. The necessity for selling was obvious.

"And you can't sell unless you advertise, and display, and merchandise."

"And collect!" Oscar added bitingly.

"Of course," Pat agreed, "but now that fly season is here, we've got to capitalize on it. We've got to call the attention of every customer to fly spray through that sign and displays—so none of them forget it."

"Signs on expensive cardboard?" Oscar said inquiringly.

Pat laughed good naturedly. "So that's what's eating you? Well, I have a surprise for you. I begged that cardboard from Dowling, the appliance dealer. It's a big discarded television set sign. The back of the sign was nice white cardboard, so I got it free. And my daughter, Kathleen, painted that fly."

Oscar looked very surprised. This—he had not expected.

"I'm running an ad, too," Pat said, "with reprints. The copy will say that a pair of common houseflies, starting outdoors in April, become 600 flies by May. If the offspring survive and reproduce 54,000,000 flies may exist by June 1. And, if conditions were ideal, these flies would multiply so that flies would cover the entire U.S. to a depth of three feet by Sept. 15. What this country needs is fly spray and lots of it. And we want to sell a lot of it."

"Well, don't take too big an ad," Oscar grumbled. "Set the copy in six point. It's cheaper."

"Then," Pat said, "I'll hang a paint brush on the front screen door, with a sign advising folks to paint their screen doors and windows with 1% lindane once a week."

"I suppose you bought a new paint brush for about \$3 just to hang on the door," Oscar said sarcastically.

Once more Pat smiled. "No, I brought an old, but clean one from home." Then, with tongue in cheek, "Holding down costs you know."

"I borrowed a garbage can from the hardware dealer. A brand new one. On it goes a sign—which I'll make myself—telling folks to wash garbage cans thoroughly once a week and sprinkle them with paradichlorobenzene crystals to help control flies."

"We won't sell enough of that to pay our postage bill," Oscar said indignantly.

Pat looked a little angry. "If we make the farmer fly control conscious, Oscar, we can sell him material to spray his garbage cans, his home, his barns, and maybe also sell him a sprayer or two. One sale leads to another."

"For heaven's sake, don't go selling anybody a sprayer until you have me look up his credit," Oscar warned. "We got troubles enough already."

"I've been doing a lot of studying about flies," Pat said. "They pester man and beast and spread disease and lower production. We should kill all we can. I also read where flies roost in shrubbery at night. So I shall advise farmers to spray the shrubs around the house and yard, too, as a

safety measure. That will mean more spray used."

Oscar grunted. "After you get all these sale signs rigged up, then Tillie and I will stay in the store selling all this fly control stuff while you go out and collect."

"I get the point," Pat said, "and I will really collect. I will come home with more than \$27.50 like you did when you went out and tried to collect last month. Our business almost sank 10% the farmers were so sore the way you talked to them."

"Some of them needed it," Oscar said.

"Maybe so," Pat said, "but you can't talk to customers like that. Maybe I'm slow in getting the money in, but I get it eventually and I keep on selling them. That's what counts."

Tillie Mason, the bookkeeper, had been listening to the argument, and spoke up. "And don't forget to advertise that new dry fly killer we've got," she said. "The farmer merely walks around the barnyard scattering it by hand, the flies eat it and topple over."

"Good girl, Tillie," applauded Pat. "We'll make you our third assistant vice president for that."

Oscar looked alarmed. "But, remember," he said, "it's an honorary job. There's no salary connected with it."

Pat and Tillie began to laugh quite loudly, and Oscar frowned. For the life of him he couldn't imagine what in the world caused their merriment over such a serious matter.

Safety Record Set By duPont Employees

WILMINGTON, DEL. — Du Pont employees, who set a new company safety record of 0.33 lost-time injury per million man hours worked last year, were more than 15 times as safe on the job as away from work according to a tabulation of off-the-job injuries reported by the company.

The company's employees, numbering nearly 90,000, reduced their off-the-job injury frequency rate in 1954 by 20% from the preceding year, suffering an average of 5.05 time-loss injuries per million exposure hours while away from work, as compared with 6.35 injuries per million exposure hours in 1953. Both of the figures are substantially lower than the latest available all-industry off-the-job rate of 7.44.

Fertilizer Helps Produce Full Silo For Arkansas Farmer

MOUNTAIN HOME, ARK. — B. Morgan, a Baxter County, Ark. dairyman, was convinced of the value of fertilizer when he filled his silo last fall.

During 1953 Mr. Morgan decided to go all out for silage production and attempt to store a surplus of feed. He planted 23 acres of Atlas sorghum but drought curtailed hopes of a large feed yield.

In 1954 Mr. Morgan again planned a silage crop—but on a less extensive scale. During this season he planted only seven acres for silage production.

He jumped his fertilization rate of 100 lb. 5-10-5 used on the seven acres, up to 400 lb. of the same fertilizer for the 7-acre plot.

Although the seasons were comparable with little rain each year, Morgan lacked only 4 tons production as much from the seven acres as did with 23 the prior year.



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Larvacide (99% pure chlorpicrin). Controls most disease-causing fungi, weed seeds, nematodes and soil insects. Recommended for use in greenhouses, cold frames, seed beds, flats, compost and potting soils.

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METHYL BROMIDE — A standard fumigant for many purposes.

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LARVACOVERS—8 gauge, extra sturdy vinyl covers to retain gas in fumigating soils, grain, etc. Florist green or clear.

Write for literature on any of the above products

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WEST COAST—1515 Third Street, San Francisco

Three Growing Seasons Help Sales for Florida Dealer

There are quite a few merchandising opportunities available to the grower. A. Russell Seed Co., Sanford, Fla., reports for the selling of seeds, fertilizers and other related items. This is due partly to the fact that some growers produce three crops a year, according to W. F. Thorne, manager of the Russell firm.

His store, he reports, sells fertilizer for truck gardening in the area from Sept. 1 until May 1. There are both small and large scale vegetable growers here who produce crops such as radishes, celery, endive, beans, lettuce, spinach and cabbage.

While many of the large scale vegetable growers buy direct, many of the smaller growers get their fertilizer from seed and other stores. The firm, for example, sells 2 tons of radish seed per week seasonally and 100 lb. bags to radish growers in the area.

"We have a very heavy turnover of all types of garden seeds," states Mr. Thorne, "and of course with the sales, we also sell fertilizer and special plant foods. Our insecticide volume is also very brisk."

Located on a main street of this growing Florida city, the Henry A. Russell Seed Co. has a metal canopy and two street sides of the building. A long sign with red and black letters on a white background names the store and then says "plants, insecticides, fertilizer. Your garden supply dealer."

Mr. Thorne reports that many vegetable growers are using a fertilizer with an analysis of 4-7-5, with about 10% organic content. Soils of Florida, he reports, differ a great deal. Most of it is low in organics, and some is acid while other is alkaline. However, due to lots of rain and sun, these soils produce excellent vegetable crops when the proper fertilizer is liberally applied and when insect pests are handled in time.

There are many flower and garden plants in this area," Mr. Thorne declares. "We belong to many of them, and occasionally we give talks about fertilizers and other products to such groups. This is excellent promotion, of course, for it gives a firm opportunity to impart authentic information to many potential customers."

Mr. Thorne reports that his firm has been in business for 21 years and is well known to most vegetable growers in the area. These growers depend upon the store which persistently gives them good seeds, year after year. This seed volume helps to pull in many repeat sales from seed customers.

Newspaper advertising helps to find people of us and get new customers, but satisfied customers after year also bring in a lot of business. We also pay a lot of attention to our in-store displays. When the seed and fertilizer customer comes in we want to sell him everything we can that he may need, and a good display helps us show him what we have."

FERTILIZER DEMONSTRATIONS
PENSACOLA, FLA. — Four fertilizer demonstrations that include 69 plots are under way in Escambia County, Fla., reports James H. Baker, assistant county agent. The demonstrations are designed to show the response of corn and cotton to varying rates of nitrogen, phosphorus and potash on different soil types.

Fertilizer Essential In Irrigated Farming, Experiments Indicate

FLOYDADA, TEXAS — Using fertilizers on grain sorghums has indicated that irrigated farming takes a heavy toll of the soil's nutrients.

On test plots near Floydada, applications of 40 lb. nitrogen and 80 lb. phosphoric acid caused a significant increase in yield over unfertilized plots. This test was made on fields which had been heavily cropped the previous year. Where the land had not been irrigated the year before, however, the use of commercial fertilizer did not show such an increase.

These results add further proof to the theory of many experts that

arid soils do not have enough inherent fertility to produce continuously under irrigation without fertilizers.

Actual field tests on several farms in Martin County have shown that heavy fertilization increases the sandyland cotton yields from one and a half to two and a half bales per acre where plenty of water is used.

South Carolina Sales

CLEMSON, S.C. — South Carolina fertilizer shipments during May totaled 75,096 tons, according to the State Department of Fertilizer Inspection and Analysis. Sales during the first 11 months of the fiscal year totaled 885,924 tons, a decrease of 4.09% from 923,714 tons during the corresponding period a year earlier.

Nitrogen Increases Sorghum Yields In Texas Tests

COLLEGE STATION, TEXAS — The application of 80 lb. nitrogen per acre caused a significant increase in yield of grain sorghum near Tullia, Texas, in 1954, according to Texas A&M College. This treatment resulted in an increase of 1,250 lb. over the check plot.

The application of 40 lb. nitrogen and 80 lb. phosphoric acid caused an increase of 1,907 lb. grain sorghum per acre over the check plot at Lubbock on Amarillo fine sandy loam soil in 1954.

These tests were grown on land cropped heavily (5,000 lb. per acre) to grain sorghum the previous year.



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With two giant chemical plants producing around-the-clock, throughout the year, Lion, with its versatile and flexible manufacturing processes, is a dependable source of the most popular and economical types of nitrogen fertilizer materials.

It will pay you to feature and sell nitrogen fertilizers with the Lion emblem on the bag, or Lion's anhydrous ammonia. They sell easily, make consistent profits for you.

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COMPANY
EL DORADO, ARKANSAS

What's Been Happening?

This column, a review of news reported in *Croplife* in recent weeks, is designed to keep retail dealers on rotational circulation up to date on industry happenings.

Prospects are that the U.S. may produce over four million tons of synthetic nitrogen annually by Jan. 1, 1957, it was confirmed by U.S. Department of Agriculture officials. . . . Production of pesticides in the U.S. for the first three months of 1955 showed increases ranging up to 100%. . . . The high value of controlling cotton insects with chemical insecticides has been clearly demonstrated throughout 16 years of experiments at Waco, Texas, the USDA reports.

A survey taken by Virginia's state chemist, Rodney C. Berry, indicated that more states are permitting the sale and distribution of fertilizer-pesticide mixtures than were so numbered in a similar survey taken in 1954. Six more states reported that mixtures were being sold within their borders than were noted in last year's questionnaire.

Gypsy moth and budworm spraying projects were being undertaken in Maine and New Mexico. More than a half million acres of timber was set for treatment and about that many pounds of DDT were to be used. . . . USDA announced promising results from two new systemic insecticides for control of cotton pests. . . . John E. Sanford, president of Armour Fertilizer Co., Atlanta, Ga., retired after a career of 45 years in the fertilizer business.

John F. Gale, economist and editor for the National Fertilizer Assn., Washington, D.C., joined the staff of Garden Foundation, Inc., Baltimore, Md. . . . Dr. Edward L. Chandler was appointed to the technical staff of Diamond Alkali Company's Chlorinated Products Division, Cleveland. . . . The University Fertilizer Corp. was formed in Madison, Wis., with authorized capital stock of 1,250 shares, no par value.

Davison Chemical Co., Division of W. R. Grace Co., announced that a new professorship has been established at the Johns Hopkins University, Baltimore, to be known as "The Grace Chair of Chemistry." The position will be filled by Dr. Paul H. Emmett of the Mellon Institute of Industrial Research, Pittsburgh.

Fertilizer consumption, tonnage-wise, was down 2.73% for the 1953-54 fertilizer year, according to the annual USDA report published in the May 30 issue of *Croplife*. However, consumption of plant nutrient materials was up 4.42% over last year's record level. The middle west continued to be the area of most increase in consumption in both actual tons used and percentage-wise.

Escambia Bay Petrochemical Co. broke ground in Florida for its new \$25 million plant. It will produce 250 tons anhydrous ammonia daily when completed next January. . . . The U.S. Forest Service sent out bid invitations for spray operations and chemicals to be used in a spruce budworm control project in Montana. Over 2 million acres are to be treated.

Robert Q. Parks was named general sales manager of Grace Chemical Co. He will continue to work out of Memphis, Tenn. . . . Glenn O. Middleton was appointed manager of the Dubuque, Ia., sales office of Virginia-Carolina Chemical Corp. C. Aubrey Clayton was made assistant manager of the Dubuque office.

Croplife's issue of May 23 reported that the Hoover Commission for the reorganization of the executive branch of the federal government has criticized the operations of TVA as being in competition with private fertilizer business. . . . Pittsburgh Coke acquired the agricultural chemical program of the Ethyl Corp.

The Radco fertilizer companies of southwestern Iowa merged with Chemical Enterprises, Inc., New York. . . . Charles E. Wilson was named chairman of the board of directors of W. R. Grace Co., marking the first time in 101 years that anyone other than a member of the Grace family has held this position.

The U.S. Department of Agriculture in its "Fertilizer Situation" report, said that the 1954-55 supply of nitrogen will be about 5% higher than that of the previous season. Potash was reported to be 0.6% higher, but the phosphorus supply was estimated to be down 3.3%.

Construction of the first nitrogen products plant in Indiana began May 9 by Calumet Nitrogen Products Co. near Hammond. It is reported to be the largest plant in the U.S. to make anhydrous from refinery by-product hydrogen. . . . An expanded market for grain protectants was indicated when the Food and Drug Administration and USDA began to promote higher sanitation standards for the nation's cereal supplies.

A contract for construction of its second contact acid plant at Searsport, Maine, was let by Northern Chemical Industries, according to J. E. Totman, president. The plant will have a rated capacity of 100 tons a day of 100% sulfuric acid. Combined with present facilities, NOI will have a total rated daily capacity of 170 tons a day. Tank storage will be increased to 4,000 tons.

C. J. Watts, Jr., joined the Agricultural Chemicals sales department of Commercial Solvents Corp., New York. He was formerly with Davison Chemical Co. . . . J. C. Crissey, manager of the Soil Building Division of GLF Exchange, Inc., Ithaca, N.Y., was honored at a banquet recently in recognition of his 30 years of service. . . . Mississippi River Chemical Co., St. Louis, named Richard G. Powell as technical service representative.

Ample supplies of pesticides for the 1955 season were seen in the USDA's report on the "Pesticide Situation." Inventories of both technical materials and the chemical content of formulations were down about 9% at the end of September, compared to 1953. Stocks of technical grades of pesticides in hands of manufacturers and mixers were down about 16%.

OVER THE COUNTER

(Continued from page 9)

trend which so closely affects their business. There lies a big opportunity ahead for them, if we are to judge from the actions of super markets. There is a growing interest (with shorter work weeks and mechanization of farms) in gardening, lawn making, shrubs and outdoor living. Folks in big cities, little towns and on farms are undergoing the same changes in living habits. Alert dealers will take cognizance of these changes, sell accordingly and become established in the community as the expert on fertilizers, insecticides, pesticides and their proper use. Fitting in the allied lines will supplement the dealer's income and profits and will build a rosy future in a line of business which—judging from the beliefs held by super market operators—can only go one way. And that way is up.

Amazing Difference

May was an unusually dry month in Minnesota, most areas getting less than an inch of rain. While it gave an early start to all crops, it did slow down their development. Fred Wetherill, Nicollet County Agent in Minnesota, who was quoted in press wire dispatches on his comments concerning the dry spell, had high words of commendation for fertilized fields.

Mr. Wetherill said properly fertilized fields in his county were in much better condition during the worst days of the dry spell than fields not fertilized. He called the difference "amazing."

What better testimonial can dealers possibly have? Nothing convinces like seeing for yourself and certainly farmers in Mr. Wetherill's area had that chance in May.

FIELD NOTES

(Continued from page 9)

farmer who buys more than he sells. . . . An alfalfa field without enough potash. . . . A cow that gives only 5,000 lb. of milk. . . . Any town between *Newport News* and the *Golden Gate* that does not consider the value of a solvent agriculture.

Any group of farmers who do not have a wide-awake dealer to serve them. . . . A job not done on time. . . . Corn on a hillside, after a hard rain. . . . A home without flowers. . . . A dump heap on the side of any road. . . . Modern youth thumbing its way on an unfixed course.

A homemaker too busy to take a vacation. . . . The fellow who thinks he knows the answers. . . . Any community trying to live on its history. . . . A farmer without a garden. . . . If farmers were to go on a 40-hour week.

When you see the creeks and rivers muddy. . . . The fellow who says the world owes him a living. . . . A community without a church. . . . A teacher or pastor who thinks the community is for the school or the church. . . . Any business man who thinks the agricultural area around his town is for his business. . . . Any county agent who does not cooperate with dealers serving agriculture, or any dealer who does not cooperate with his county agent.

FIRM INCORPORATES

DOVER, DEL.—Brandt & Gardner Fertilizer, Inc., has filed a charter of incorporation here.

USDA Microclimate Studies Offer New Growth Information

WASHINGTON — The study of microclimate (the atmospheric environment near the ground surface where plants grow) is being undertaken by the U.S. Department of Agriculture.

In the past 5 or 6 years, scientists have built up a better understanding of conditions under which many crop plants live; created special instruments and other equipment for studying microclimate; and made practical applications of the results of this research in solving cropping problems, particularly those brought on by certain diseases.

Work carried on at the U.S. Regional Pasture Research Laboratory, State College, Pa., shows, for example, that measurements of temperature and humidity in a stand of close growing plants, particularly forage crops, differ greatly from measurements made a few inches above the crop.

Studies of microclimate by agronomist V. G. Sprague and associates at the Pasture Laboratory, and by other forage crop scientists at the Department's Plant Industry Station, Beltsville, Md., have resulted in better knowledge of winterkill of legumes in the development of varieties more resistant to conditions that bring it about, and in legumes and grasses better suited to growing in the limited light that is available near the ground with some of the thick forage crop mixtures.

BLUE MOLD

BLACKSBURG, VA.—Blue mold has caused considerably more injury to tobacco this year than it has during the past five years, reports S. B. Fenne, plant pathologist at Virginia Polytechnic Institute.

VIRGINIA DEALER

(Continued from page 9)

fertilizers can do to help them produce crops profitably, and they are ready to "go to school" to get this information.

Mr. Roller says that his company has a representative at all the meetings held throughout the trade area by county agents. Thus the firm is able to keep in close touch with developments in all regions of the area and sometimes is able to come up with seed, fertilizer and feed suggestions which fit into farmers' planning.

"We contact many farmers right on their farms," states Mr. Roller. "for we find that we can serve some farmers better if we can plan fertilizer and feed operations with them. There are farmers, however, who do not need this sort of help."

One of the interesting promotional ideas which Mr. Roller tried during the past year was filling a large bag with oats and placing it in a store location. He invited farmers to guess the weight of the bag. During the first three days of the contest 12 guesses were turned in, showing how interesting this contest proved to farmers.

Another promotion idea which worked well last fall was the giving of a special discount of \$1 per ton on fertilizer purchased for fall use within a specified period. Quite a few farmers bought fertilizer in the fall last year, especially for pasture renovation.

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W. E. Shelburne

W. E. Shelburne Named President of Armour Fertilizer

ATLANTA—W. E. Shelburne, of Atlanta, executive vice president for the past five years, was elected president of the Armour Fertilizer Works, Inc., at a meeting of the board of directors of the parent Armour & Co., in Chicago June 9.

Mr. Shelburne, who also was elected vice president of Armour & Co., will succeed John E. Sanford, president for 23 years, who retired June 3. Mr. Shelburne became associated years ago with Armour Fertilizer. In Lawrenceburg, Ky., Mr. Shelburne began his career with Armour as a salesman in the Montgomery (Ga.) division after six years' service with a Montgomery bank.

Later, he was transferred to Nashville and became division manager during his 13 years there before moving to Atlanta and the general offices in 1949. A year later, he became executive vice president of Armour Fertilizer Works and assistant vice president of Armour & Co.

During the Korean war, Mr. Shelburne served as a member of the Superphosphate Industry Advisory Committee, a price control board. Armour Fertilizer Works, with national headquarters and a plant in Atlanta, has 31 branch plants and offices in the U.S. and in Cuba and Puerto Rico, including two phosphate rock-producing plants, located at Bartow, Fla., and Columbia, Tenn.

Mr. and Mrs. Shelburne reside at 70 Peachtree Road in Atlanta. He is a member of Capital City Club.

Harold Noble Retires from S. B. Penick

NEW YORK—Harold Noble, vice president in charge of the insecticide division of S. B. Penick & Co., retired June 1, the company announced recently. Mr. Noble, 67, has been associated with Penick for 38 years. He will continue as a member of the board of directors.

Frank Seeland, who has been in active management of the division for some time, has assumed full charge of Penick's insecticide operations.

USDA APPOINTMENT

WASHINGTON — Appointment of Arthur T. Pentzer as chief of the Biological Sciences Branch, Marketing Research Division, Agricultural Marketing Service, has been announced by the U.S. Department of Agriculture. His appointment fills a vacancy created last October by promotion of George W. Irving, Jr., former chief of the branch, to the post of deputy administrator for research, Agricultural Research Service.

INSECT, PLANT DISEASE NOTES

(Continued from page 5)

Officials said that the field corn borer infestation is not nearly so serious as the overwintering borer population indicated, since early development of the corn borer is equivalent to a general delay in corn planting.

Entomologists said it will be profitable to treat the most advanced fields in the north half of the state. Treatments are especially advised for early plantings of canning sweet corn.

The Hessian fly has caused noticeable damage to many wheat fields in the south-central, western and south-western Illinois. Occasional fields still remain where the armyworm infestation is large enough to warrant treatment. Parasites are now prevalent and will help to control late armyworms, entomologists said.

New Mexico Reports Yellow Clover Aphids

STATE COLLEGE, N.M.—Yellow clover aphids continue to build up on alfalfa in the Mesilla Valley of New Mexico. This aphid is also abundant on black medic and bur clover, according to New Mexico A&M College entomologists.

Lygus bugs are becoming abundant in alfalfa fields in the Mesilla Valley, 40-50 per 100 sweeps having been reported in some fields.

Tree hoppers have also been reported on alfalfa with 15-20 per 100 sweeps in some fields. Thrips infestations are still general throughout the Mesilla Valley cotton fields. Cowpea aphids are still being reported on cotton in the Mesilla Valley; however, with the advent of

hot weather, their numbers should begin decreasing.

Cotton aphids are light to abundant in cotton in the Mesilla Valley and may become a problem later in the season. Elm aphids are very heavy on American elm in the Mesilla Valley.

Grasshoppers are still numerous in Lea and Chaves counties where 176,000 acres of range land are being sprayed. About 42,200 acres between Elida and Kenna in Roosevelt County are also heavily infested.

Nabids are building up in alfalfa. From 50 to 100 per 100 sweeps have been reported in some fields.

MANGO CROP

FT. MYERS, FLA.—Lee County, Fla., mango growers are expecting the crop this year to be earlier but lighter than average, says C. P. Heuck, county agent. Growers who have sprayed regularly with Dithane and copper for anthracnose control are reporting good quality of exceptionally good fruit, the agent adds.



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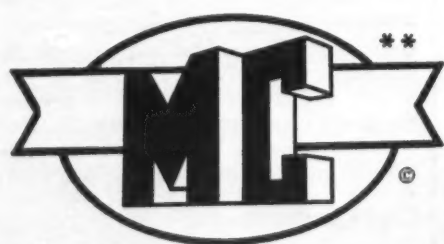
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WORLD REPORT

Industry News from Everywhere

By GEORGE E. SWARBRECK
Cropolife Canadian and Overseas Editor

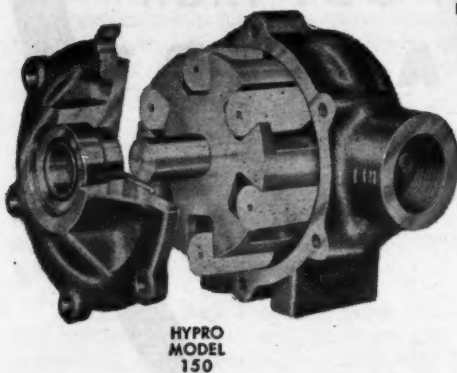
Farmers have been fighting crop-hungry grasshoppers for centuries. Until recent years, however, it was a losing fight. Aside from natural predators, poisoned bait was the only effective weapon, and it had its limitations. During serious outbreaks, much time and labor were required to mix large quantities of bran, sawdust and arsenic for baiting strategic spots. But because of the danger to humans and animals, poison mixtures could not always be spread where they would do the most good.

The introduction of modern insecticides has provided the farmer with new anti-hopper weapons. Poisoned bait is still used, but chemical sprays have cut down on the amounts needed, and in certain situations give protection where baits cannot, such as when a growing crop suffers a mid-summer invasion by winged hoppers.

The latest chemical aid in grasshopper control is methoxychlor. For grasshopper control methoxychlor spray is prepared from wettable powder, and is applied at the rate of 3 lb. to the acre. The best results are obtained when the control program is started as soon as

the insects begin to hatch in the spring.

Methoxychlor is said to give slower and lower kills than some other insecticides, but it still prevents any serious grasshopper damage and leaves no harmful residue on crops. This low toxicity feature means that it can be used on pasture crops where dairy cows or beef cattle graze or on other vegetation used for animal feed.



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Fertilizer Storage

A French firm is recommending the storage of fertilizers in airtight sheet steel silos. This type of storage, the firm claims, will keep certain kinds of fertilizers in good condition, and will prevent them from becoming hard through contact with moisture-laden air or through sweating in concrete storage.

This type of cell has been developed in France for the storage of grain during and following the harvest. The firm concerned, Construteurs Ets Jaques Boutard Pringy par Ponthierry, states that it has found welded metal to be the only material that gives complete air tightness, though a satisfactory way of using glass or plastic may be found in the future. Cells, though themselves heat conducting and liable to transmit outside variations in temperature, are specially treated to reflect the sun's heat. Each cell is built up from three fabricated panels of interlocking steel sheets according to designs specially calculated to give maximum resistance to pressure. The various elements are then arc welded so as to eliminate the least possible space between them.

For the prevention of corrosion, the sheets are treated with a special bitumastic paint, after having been phosphated to reduce their electrical conductivity, since stray electric currents are vital factors in the corrosion of metals. Finally, the cell is given a coat of a special paint which gives a silver appearance and provides protection against the sun's rays.

Canadian Acid Plant

Noranda Mines has announced plans for the construction of a multi-million dollar sulphuric acid plant in Algoma.

C. W. Clark, director of research development for the company, recently conferred with Chief William Albert Owl and R. B. G. Lawrence of the Indian Affairs Branch of the Canadian government, to open negotiations for the construction of a plant on 125 acres on the Serpent River Indian Reserve at Cutler, 20 miles east of Blind River.

Mr. Clark said the company hopes to have the plant in production in July, 1956. The Indians will have to ask the government for permission to lease the land to Noranda Mines for 99 years, and if this permission is refused the company will pick one of several other sites currently under consideration. The plant will have a production capacity of 500 tons of acid a day.

Lady Top Dresser

The use of aircraft for top dressing is rapidly achieving acceptance among Australian farmers. Recently, three pilots have been employed, top dressing over 40,000 acres of land in south Australia, with more than 4,000 tons of super phosphate. One of them is a lady, Margaret Clarke, one of Australia's leading flyers.

Rhino-Beetle Fight

The Fijian Rhinoceros Beetle Eradication Board has given a report of its activities in connection with the attempted eradication of the Rhino-beetle, which is harmful to coconuts. Currently, the infestation appears to be limited to the island of Viti Levu. Among the methods being used is the treatment of the axils of the youngest fronds with benzenehexachloride and sawdust. The work is proving extremely costly, and so far it has not been possible to secure complete eradication. The South Pacific Commission Research Organization is now working on the problem.

Cutworms

Army cutworms are now attacking young grain crops in southern Saskatchewan and southern Alberta. In Saskatchewan the infestation extends over 10,000 acres and spray poisoning is being used. In southern

Alberta the insects have attacked alfalfa, flax and commercial mustard but no wheat has been reported damaged.

The army cutworm is rare in western Canada, but has been known to do extensive damage to crops in Montana. It is different from the pale western cutworm often found in large areas of the southern prairie provinces.

The present outbreak is believed to be due to the dry weather experienced last July, which was followed by wetter-than-usual weather in September which caused green growth on summer fallow fields, preventing cultivation and providing feed for the young worms.

South American Developments

Several countries in South America are making rapid progress in erecting fertilizer plants to meet the vast needs of that continent. The state of Sao Paulo in Brazil hopes to have a nitrogenous fertilizer plant functioning at Cubatao, near Santos, under the jurisdiction of the National Petroleum Authority by the end of March, 1956.

It is expected that the new plant will yield 350 tons of fertilizer a day, with a nitrogen content of 20½%. Officials of the National Petroleum Authority have signed a contract with a construction firm to begin the work of erection and the plant will use for its raw materials residual gases from the authority's refinery at Cubatao.

From Venezuela comes news of progress in the erection of the Vetrochemical Plant, which is to be located near Puerto Cabello. Bids have been received from American and European firms and are currently under consideration. Up to \$30,000,000 is expected to be spent on the project by the end of 1957. Annual production has been set at 150,000 tons of fertilizer, and 50,000 tons of explosives.

Monsanto Announces Two Appointments in Merchandising Division

ST. LOUIS — Appointment of Roy L. Brandenburger of St. Louis as advertising manager for household products for Monsanto Chemical Co. Merchandising Division has been announced by Roy L. Brandenburger, vice president of the company and general manager of the division.

Mr. Brandenburger also announces the appointment of Stanley W. Sullivan of Chicago as product sales manager for the division's garden products. Elmer L. Weil of St. Louis continues as product sales manager for surface coatings.

Mr. Gardner, who will report to Franklin J. Cornwell of St. Louis, director of advertising and sales promotion for the Merchandising Division, joined Monsanto in 1944.

Mr. Sullivan, who will report to Edward L. Hodge of St. Louis, general manager of sales for the Merchandising Division, will be headquartered at the division's Chicago office. He joined Monsanto in 1935. Mr. Sullivan's present assignment, Mr. Brandenburger said, was made "in the interests of increasing specialized customer service in the field of garden chemicals."

PLANTING DATES

LAFAYETTE, IND.—The old adage that "the early bird catches the worm" does not imply that the earliest planted corn gives the largest yield, say Purdue University extension agronomists. Early planted corn, May 3, yielded less than corn planted in mid to late May every year for one in the 14 years of experiment conducted by S. R. Miles of the agronomy department at Purdue.

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H. R. Huston, Retired American Cyanamid Executive, Dies

TRURO, MASS.—Howard R. Huston, who retired May 30 as vice president and director of the American Cyanamid Co. and consultant to the company since that time, died June 8 at his summer home here. Mr. Huston, who resided at 1 Gracie Terrace, New York City, was 62.

He joined American Cyanamid in 1930 as assistant to the president. He was elected vice president in 1951, and director in 1952. Mr. Huston directed the company's public relations and institutional advertising, and also was in charge of personnel administration and employee relations.

Mr. Huston was vice president and director of the National Farm Chemurgic Council and a member of the Manufacturing Chemists Assn., American Mining Congress and the National Association of Manufacturers.

He was appointed a member of the secretariat of the League of Nations in 1919 by President Woodrow Wilson after having served as secretary to the general staff of the Army of Occupation in Germany. He was commissioned soon after enlisting in the Army during World War I.

Mr. Huston was advisor to the United Nations Organization committee on interim facilities in 1946. In 1948 he was named an industry delegate on the chemical industry committee of the International Labor Office.

He was born in Sweet Springs, Mo., and was a graduate of the University of North Dakota. He received an honorary M.A. degree from the university in 1928.

Survivors include his widow, Mrs. Janet McMillan Bingham Huston; two daughters, Mrs. Eugene Laning, Jr., and Mrs. Bruce Hill; three sisters and two brothers.

Funeral services were held June 11 at the Truro Congregational Church.

FERTILIZER-PESTICIDE

(Continued from page 7)

residue remaining on the crop or in the soil has been carefully considered in arriving at correct directions for labeling.

"Under most laws, the manufacturer is held responsible if the pesticide, when used as directed, or in accordance with common recognized safe practice, be injurious to living man or other vertebrate animal or vegetation to which it is applied, or to the person applying such pesticide. This responsibility has been upheld by the Virginia Court of Appeals and other courts. No comparative responsibility to my knowledge appears in any fertilizer Law."

Focusing the discussion on fertilizer-pesticide mixtures, Mr. Berry declared that under the federal act, the pesticide is the active ingredient and the fertilizer is the diluent or inactive ingredient, and such mixtures passing in interstate commerce must be registered.

He reported on results of his recent survey of regulatory procedures throughout the U.S., Canada, Hawaii and Puerto Rico, stating that in states and countries having both laws, the manufacturer of these mixtures will be required to comply with the provisions of both laws, and in most instances, this includes registration under both laws.

Mr. Berry reported that the Southern Association of Feed and Fertilizer Control Officials has unanimously adopted the following resolutions:

"1. In view of the long lasting effects of the misapplication of pesticides, it is recommended that ferti-

lizer control officials of this association not register or permit the sale or the custom mixing of fertilizers containing pesticide for field crops, unless such mixtures have been formally approved by the officials of the agricultural experiment station or other officials vested with such responsibility by law in their state.

"2. It is believed that the use of mixtures of fertilizers and pesticides is generally based on the economics of the practice and that the danger of contaminating crops or soils or both by misapplication, by inappropriate levels and methods of application is real and does not warrant the saving in labor costs.

"3. Mixtures of pesticides and fertilizers which are registered for sale should be properly labeled and meet all requirements of both the fertilizer and pesticide laws of the various states."

This resolution has since been adopted by the Association of American Fertilizer Control Officials, the Association of American Pesticide Control Officials and by the

Experiment Station Committee on Organization and Policy, Mr. Berry said.

He stated that probably few fertilizer manufacturers are aware of the legal responsibilities they will assume in the marketing of pesticides in the form of fertilizer-pesticide mixtures.

"Label claims, including 'ingredient statement,' 'directions for use' and 'warning statements' are extremely important as they furnish essential information to the user and often are the basis for determining the responsibility of the manufacturer," he declared.

Mr. Berry advised that before entering this field, both the pesticide manufacturer and the fertilizer manufacturer should consider the complications and responsibilities which must be assumed in the marketing of these mixtures.

Following the discussion, Mr. Bailey summed up the talks by reviewing the matters of production, legal and control aspects of mixtures, pointing out that they involve "difficult and

exacting factory procedures."

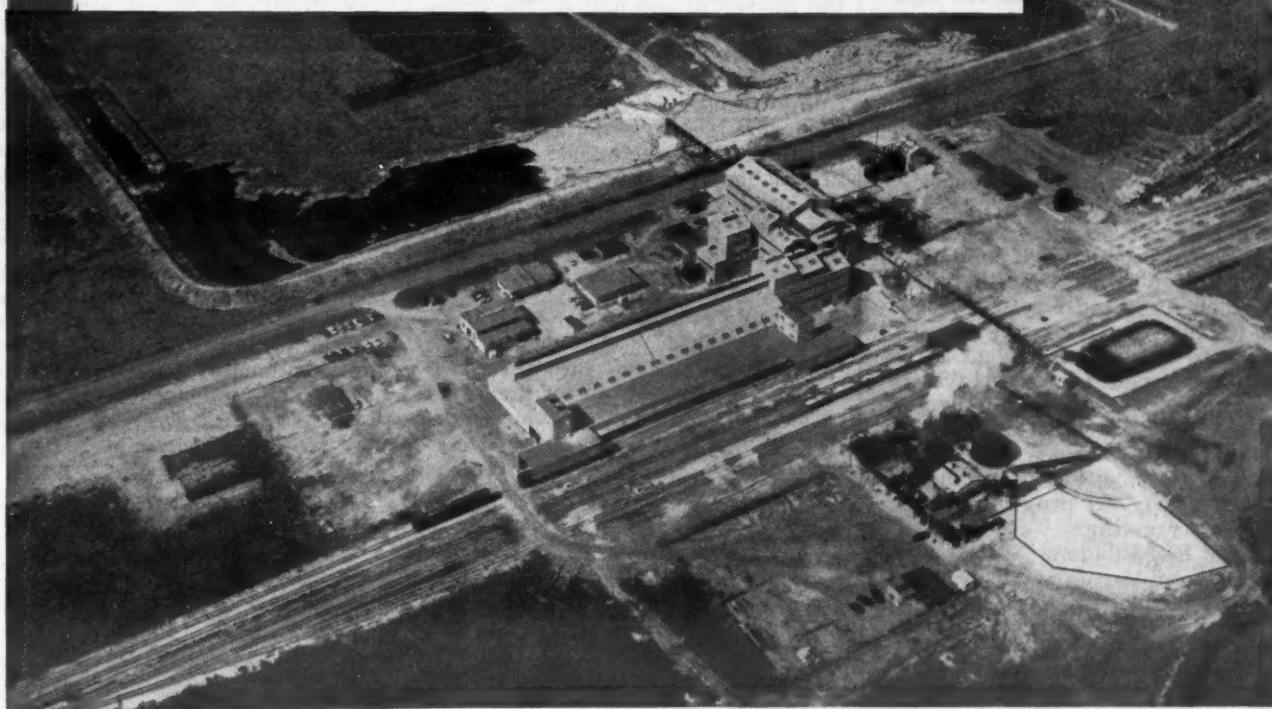
"The handling of such pesticides in the fertilizer factory will create serious problems in industrial hygiene. Prevention of air contamination with odors much worse than those created by fish meal, meat scraps or spent acid may be very expensive, or even suggest factory relocation. The farmer must be taught how to use the mixtures safely.

"There are no data to prove that the mixing makes the plant nutrients in the fertilizer any more quickly available or longer lasting, or that the pesticide is more effective, but labor is a major farm expense item and the efficient farmer is continually on the alert for savings."

INSECTICIDE ON PULPWOOD

FT. EDWARDS, WIS.—Nekoosa-Edwards Paper Co. here has been testing, with good results, use of chemical insect sprays on pulp logs piled in the woods before shipment. The purpose is to reduce losses from boring and chewing insects in the wood yards and forests.

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Quality is the watchword at the big, new V-C Triple Superphosphate plant at Nichols, Florida. Here, V-C Triple Superphosphate is produced so that it retains its natural, desirable texture—a big help to you in simpler, faster ammoniation in your plant. This superior texture also helps you cut down on recycling at

your mixing machines. V-C Natural-Texture Triple Superphosphate is backed by many years of experience and production know-how. V-C pioneered in the production of concentrated superphosphate as far back as 1907, when it put into operation, at Charleston, S. C., the first large-scale plant in the United States.

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NATIONAL PLANT FOOD INSTITUTE

(Continued from page 1)

is in "any way based on a desire to do away with price supports or to discredit them." He added that the supports are a "market facilitating mechanism" and that they "should not be perverted to other purposes."

The USDA official continued by saying that much discretion must be exercised in the support of many commodities and the policy is about as follows: "To make use of price supports, where discretion exists, at a level as high as possible and still move the agricultural commodities to market without creating unmanageable surpluses in government hands. The levels we are setting are intended to permit producers to market these commodities in an orderly manner."

"At this time," he continued, "with large government stocks of many commodities on hand, it is necessary to use supports also to prevent the agricultural markets of this country and of the world from being demoralized."

"Furthermore, until stocks are reduced to a manageable basis, tight acreage controls will have to be continued on some crops."

"This problem of surpluses has arisen in part out of a failure to adjust to the technological revolution in agriculture. Many other problems have also sprung from this revolution. It has made necessary much larger investments per agricultural worker—the average investment per worker for agriculture as a whole is now about \$14,000. This in turn requires, along with better marketing, a lowering of costs per unit of production. Otherwise farmers cannot produce profitably."

"In this effort to lower costs per unit of output, plant foods are highly important. An ample supply of plant foods gives assurance of more productive, more profitable farming. It leads the way to new opportunities for industry and commerce."

"Proper use of fertilizer, then, is one of the keys to more profitable, more efficient agriculture," he said, but added that "farmers must lower unit costs of production if they are to obtain proper rewards for their risks and labor. They must adjust production to markets. Research can help with more answers more quickly."

"Future agricultural needs will require farmers to make further increases in efficiency if our growing population is to continue well fed and is to use the same low percentage of take-home pay to provide continuously better eating."

Annual Soil Builders' Awards were presented on the June 15 program, and two lawmakers were heard in the final meeting of the convention.

Awards were presented to Kirk Fox, editor of *Successful Farming*, Des Moines, and Tom Leadley, editor of the *Nebraska Farmer*, for "superior journalistic contributions toward the building of the soils of our nation." Presentations were made by Louis H. Wilson, secretary of the American Plant Food Council and newly-elected secretary of the NPFI.

Mr. Fox received the award for the second time since the nationwide "Soil Builders Award for Editors" contest was established in 1952 with the approval of the American Agricultural Editors' Assn. Judges for the contest were seven nationally-known leaders in both agriculture and business.

Scrolls signed by the national judges were awarded Mr. Fox, who represented the winner among magazines of more than 300,000 circulation and to Mr. Leadley, for magazines of less than that figure. The 44 national farm magazines entered in the contest, represented a total readership exceeding 50,000,000.

Harold D. Cooley (D., N.C.) of the

House Committee on Agriculture declared that "there is a deliberate and vicious effort being made to cause consumers to rise up and to revolt against the farmers of our nation," in his address before the NPFI June 15. He told the group that this effort is part of a drive to destroy the farm program and that misinformation and prejudices now being spread over the country threaten to bring about a depression in agriculture that will imperil the nation's total economy.

"Those who live in industrial areas and consuming centers are being told, in effect, that farmers are parasites and are living high on government checks . . . the farmer is preying upon the public and that the farm program is responsible for the high cost of living," he said.

Mr. Cooley called upon the Institute and all industries closely allied with agriculture to join with farmers "to tell the truth about agriculture."

He proposed a positive, non-political public relations program for farmers—"a program to plant the truth about agriculture, wherever it cannot now be found."

"American agriculture must not be pauperized and impoverished," he said. "We will not institutionalize a peasant class on the farm lands of our country. There are those who would plow under the small farmers of America, and mechanize all the farm lands. There are those who do not realize that when food is cheapest on our farms, the soup lines are the longest in the cities."

Mr. Cooley said the truth is that "Consumers today are getting more and better food for a smaller portion of their income than ever before in the history of our nation. The farmer's share of the consumer's food dollar has dropped from 53¢ in 1946 to 42¢ today. The average farm per capita income is scarcely half the per capita income of non-farm people. Farm income is declining, farmers are in trouble and they are frightened and need your help to the end that the truth might be told concerning their programs," he told the convention.

As to the cost of the farm program he declared that "when this administration came into office the price support program for the basic crops through the Commodity Credit Corp., did not show a loss

but on the contrary, the program showed a net profit of more than \$13,000,000."

Emphasizing the great market for industry that has been created by improved farm income since the farm program was inaugurated 22 years ago, Mr. Cooley pointed out that farmer expenditures for fertilizer and lime have jumped from \$125,000,000 in 1932 to \$1,200,000,000 in 1954; that in 1932 there were 1,022,000 tractors on farms, today there are almost 5,000,000; that our farmers owned 810,000 trucks then, now they own almost 3,000,000 trucks; grain combines on farms have increased from 60,000 in 1932 to 960,000 today; corn pickers from 50,000 to 660,000; milking machines from 100,000 to 740,000.

"My one great purpose in coming here to talk to you," he told the convention, "is to plead for harmony in the ranks of agriculture—to call upon you to help us tell the truth to the consumers of our country and to bring producers and consumers together in a common cause—the general welfare of all of our people."

Sen. John L. McClellan (D., Ark.), chairman of the Senate Committee on Government Operations, in the final session, told the group that whether we like it or not, or whether for better or for worse, both "big government and big business are here to stay."

The senator added that "both are essential, if not indispensable, to our maintaining the posture of strength and power, both economic and military, that our expanding economy requires and that the exigencies of world conditions demand."

Mr. McClellan outlined the present world situation, which, he said, has "thrust us into a vital struggle for the preservation and survival of our way of freedom and civilization."

Although the Kremlin sometimes gives the appearance of softening its policy toward the rest of the world, he said that we would be "inexcusably derelict in responsibility if, in failing to recall our experiences of the past and profiting by them, we enter into conferences and negotiations under any illusion or reckless assumption that the Communists will act in good faith."

"We must remain alert to their characteristic cunningness, connivance and deceit, while at the same time affording them every opportunity to demonstrate their good faith and high purpose by actions and deeds that square with accepted standards of honor and principles of justice and

CONVENTION COVERAGE

Coverage of the preliminary National Plant Food Institute convention is by the following Croplife members: Lawrence A. Long, Donald Neth and W. E. Lingren, all of Minneapolis and Paul L. Dittmore, New York.

humanity," Mr. McClellan said.

He reviewed the Hoover Commission report which was submitted to Congress proposing some 281 steps toward reorganization. The second such commission is now under way, he said, and when all the reports are in, it will have submitted 320 major recommendations. All thus far submitted have revealed waste, extravagance and inefficiency "to an astonishing degree," he said.

In closing his talk, the senator told the group that he not only favors the elimination of all non-essential services and functions of the federal government, which are competitive with private enterprise, but also he looks with disfavor upon the government embarking on any type of business enterprise which private capital can do as well or better.

Mr. McClellan told of his proposals to the senate that a joint committee on the budget be set up in the two houses of Congress to work with the appropriations committees. "Such a committee would save the taxpayers hundreds of millions of dollars annually," he said.

Another bill introduced by Mr. McClellan this year is one that would establish a "federal policy concerning the termination, limitation, or establishment of business-type operations of the government which may be conducted in competition with private enterprise." He expressed the hope that his bill might be reported favorably.

NPFI OFFICERS

(Continued from page 1)

Truitt is president of the American Plant Food Council.

Members named to the new executive committee are Mr. Howell; Mr. Geoghegan; Louis Ware, president of International Minerals and Chemical Corp., Chicago; W. E. Shelburne, vice president of Armour and Co. and president of Armour Fertilizer Works, Atlanta; Ralph B. Douglass, president of Smith-Douglass Co., Inc., Norfolk, Va.; John A. Miller, president of Price Chemical Co., Louisville; J. E. Totman, president of Summers Fertilizer Co., Inc., Baltimore; Edwin Pate, president of Dixie Guano Co., Laurinburg, N.C., and George E. Pettit, vice president of Potash Company of America, Washington.

Hearing Scheduled on 1956 Sugar Beet Crop

WASHINGTON—The U.S. Department of Agriculture has announced that an informal public hearing will be held in Washington June 27 for the purpose of receiving views and recommendations for use in establishing restrictive proportionate share (farm acreage allotments) for the 1956 sugar beet crop in the domestic beet sugar area. The hearing will begin at 10 a.m. in the main auditorium of the Department of Agriculture.

CAUTION ADVISED

WASHINGTON — Agronomists of the U.S. Department of Agriculture have advised farmers to consult the state agricultural experiment station before making seedings of New Zealand white clover. This suggestion is a result of many inquiries about the clover in recent weeks because of published statements about its virtues, many of them erroneous, USDA said.

National Plant Food Institute Names Members of New Board of Directors

WHITE SULPHUR SPRINGS—The board of directors-elect of the new National Plant Food Institute, announced at the preliminary meeting of the group here last week, includes:

Richard E. Bennett, Farm Fertilizers, Inc., Omaha; Elbert N. Carvel, Valliant Fertilizer Co., Laurel, Del.; John V. Collins, Federal Chemical Co., Louisville; J. C. Crissey, G.L.F. Soil Building Service, Ithaca, N.Y.; James F. Doetsch, Chilean Nitrate Sales Corp., New York; Ralph B. Douglass, Smith-Douglass Co., Inc., Norfolk, Va.; J. H. Epting, The Epting Distributing Co., Leesville, S.C.; H. C. Fisher, The Diamond Fertilizer Co., Sandusky, Ohio; George W. Gage, Anderson Fertilizer Co., Inc., Anderson, S.C.; Marlin G. Geiger, The Davison Chemical Co., Division of W. R. Grace & Co., Baltimore; E. A. Geoghegan, The Southern Cotton Oil Co., New Orleans; Wallace B. Hicks, Wilson & Toomer Fertilizer Co., Jacksonville, Fla.; R. L. Hockley, Olin Mathieson Chemical Corp., Baltimore; J. A. Howell, Virginia-Carolina Chemical Corp., Richmond; B. H. Jones, Sunland Industries, Inc., Fresno, Cal.; Edward R. Jones, Apothecaries Hall Co., Waterbury, Conn.; Ray L. King, Georgia Fertilizer Co., Valdosta, Ga.; R. D. Martenet, E. Rauh & Sons Fertilizer Co., Indianapolis; John A. Miller, Price Chemical Company, Inc., Louisville; William J. Murphy, American Potash & Chemical Corp., New York; Edwin Pate, Dixie Guano Co., Laurinburg, N.C.; George E. Pettit, Potash Company of America, Washington; John E. Powell, The Smith Agricultural Chemical Co., Columbus, Ohio; C. T. Prindeville, Swift & Co., Chicago; P. J. Prosser, The Baugh & Sons Company, Baltimore; Hugo Riemer, Nitrogen Division, Allied Chemical & Dye Corp., New York; John E. Sanford, Armour Fertilizer Works, Atlanta; Jack B. Snyder, The Snyder Chemical Co., Inc., Topeka; W. C. Stark, Atlantic Fertilizer Corp., Riverhead, N.Y.; W. T. Steele, Jr., Southern States Cooperative, Inc., Richmond; Mac C. Taylor, Oregon-Washington Fertilizer Co., Seattle; J. E. Totman, Summers Fertilizer Co., Inc., Baltimore; Louis Ware, International Minerals & Chemical Corp., Chicago; F. J. Woods, Gulf Fertilizer Company, Tampa, and M. Steele Wright, Texas Farm Products Company, Nacogdoches, Texas.

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William P. Drake Named President Of Pennsalt

PHILADELPHIA—Executive vice president William P. Drake will succeed George B. Beitzel as president of the Pennsylvania Salt Manufacturing Co. on July 1, the latter has announced. Mr. Beitzel will continue his association with the company as a member of its board and in addition, will serve as chairman of the board of the Pennsalt International Corp., a subsidiary. He joined the company in 1930 as a product sales manager and became its chief executive in 1949.

At 42 years of age, Mr. Drake will be the youngest president in Pennsalt's 105-year history. He has 21 years' service with the firm.

Mr. Drake came to Pennsalt while still an undergraduate at Bowdoin College, started as a maintenance worker at the company's Wyandotte, Mich., works, and after three years of diversified production experience was assigned to supervisory duties in the chemical specialties department. In 1941, he became manager of this department and subsequently served as assistant vice president and vice president in charge of all company sales.

In 1952, he represented his industry in the Office of Price Stabilization as director of the rubber, chemicals and drugs division. When Pennsalt decentralized its operations in 1954, Mr. Drake became general manager of the company's largest operating unit, the industrial chemicals division.

To facilitate gradual transfer of responsibility and the projection of long-range expansion plans, Mr. Drake in February was appointed executive vice president and elected to the board. His assumption of complete responsibility for the company's multi-plant operations will follow by one week the relocation of its executive offices to Three Penn Center Plaza.

Support Minimum for 1956 Wheat Announced

WASHINGTON — The U. S. Department of Agriculture has announced that the minimum national average support price for 1956-crop wheat will be \$1.81 bu., if quotas are approved in the referendum on June 25.

If quotas are not approved, the available support level under present legislation will be at 50% of parity, or about \$1.19 bu. on the basis of present parity estimates. These full support levels will be available in commercial wheat states for those who comply with their individual farm acreage allotments. Support rates in the 12 non-commercial wheat states are, by law, set at levels representing 75% of the rates for commercial areas.

High Pressure Spray Stops Clover Aphids

FABENS, TEXAS — The yellow clover aphid has finally found some alfalfa fields on which it can make little headway. These are on the S. M. Marasovich farm near Fabens.

Kenneth Suggs, co-manager, decided that a high-pressure spray was needed to get good penetration in the lower part of the plant where the aphid first starts. He had a high-pressure spray rigged up and applied a high percentage solution of malathion and water to the alfalfa.

Results have been favorable with this method, and while the aphids have not completely left the fields, the build-up has been much slower than normal, Mr. Suggs reports. He says they got a 95% kill, and that three sprayings a season may be enough to keep down aphid damage.

Developer of Soil Phosphorus Test Wins Top Award

WASHINGTON — The 1955 Hoblitzelle Agricultural Awards for outstanding research contributions to American farming have been won by two scientists of the U. S. Department of Agriculture and one from the Texas Agricultural Experiment Station.

The two scientific achievements recognized by these awards, presented at the Texas Research Foundation, Renner, Texas, were results of state-federal cooperative investigations—one made in Colorado, the other in Texas. They brought the award winners a total of \$10,000 in cash and three gold medals.

Dr. Sterling R. Olsen, USDA soil scientist stationed at Fort Collins, Col., and working with the Colorado Agricultural Experiment Station, won the Hoblitzelle National Award in Agricultural Sciences for development of a new method for estimating the amount of soil phosphorus available to plants. His award consisted of \$5,000 and a gold medal.

Joseph C. Stephens, USDA plant breeder stationed at Chillicothe, Texas, and J. Roy Quinby, superintendent of the Texas Agricultural Experiment Station at Chillicothe, jointly received the Hoblitzelle Achievement Award for Advancement of Texas Rural Life for their development of a practical method for commercial production of hybrid sorghum seed. They shared a \$5,000 cash award, and each received a gold medal.

The test for plant-available soil phosphorus developed by Dr. Olsen is based on use of a water solution of ordinary baking soda (sodium bicarbonate) to dissolve the phosphorus from a soil sample. It has already been adapted by soil-testing laboratories in a number of states and in Turkey, India and other countries.

The Hoblitzelle Awards, established by the Hoblitzelle Foundation and first presented in 1951, are administered by the Texas Research Foundation of Renner, Texas. The National Award—recognized as one of the country's major prizes for scientific achievement—is presented every two years to the scientist who is considered to have made the greatest contribution to agriculture through research during the previous two years.

Barrett Division Buys Ironton, Ohio, Property

IRONTON, OHIO—Barrett Division, Allied Chemical & Dye Corp., has purchased an additional 11.5 acres of land adjoining its present Ironton, Ohio plant, according to announcement by T. J. Kinsella, president.

Mr. Kinsella stated the acquisition will provide room for expansion of the plant's manufacturing facilities. Barrett produces coal-tar chemicals at Ironton, including phthalic anhydride, naphthalene, creosote oil and industrial pitches.

Buckeye Soda Co. To Be Liquidated

CLEVELAND — Plans for liquidation of The Buckeye Soda Co., Painesville, and absorption of its administrative operations by Diamond Alkali Co., Cleveland, were announced recently by John W. Mantz, general manager of the firm's Silicate, Detergent, Calcium Division.

Formed in 1923 and operated since then as a subsidiary of Diamond, The Buckeye Soda Co. has been producing and packaging chemical specialties for the grocery, drug and industrial maintenance supply fields, as well as detergents in substantial volume for the parent company.

Cool Weather Retards Young Cotton Growth In Mid-South Areas

MEMPHIS — Cool weather over much of the Mid-South has retarded the growth of young cotton in some areas.

This was the picture given by extension specialists, who also pointed out that the situation makes cotton more susceptible to soil-borne diseases.

Other crops are in good shape, with ample moisture in most areas. Truck crop growers in the Crystal Springs, Miss. area are marketing snap beans in large quantity and have begun to market tomatoes and peppers.

Many farmers now are planting sudan and millet for temporary grazing and are working out corn and sorghum for silage. W. R. Thompson, extension pasture specialist in Mississippi, reported.

Thrips continue to damage young cotton in many areas, according to A. G. Bennett, extension entomologist, who advised a continued poisoning program.

K. H. Buckley, Mississippi extension garden specialist, reported that with mild weather and plenty of moisture, home gardens are in good shape and are "pouring out" the vegetables.

BLUEGRASS PROGRAM

LEXINGTON, KY. — About 2,000 acres of bluegrass in Boyle County, Ky., were top-dressed this spring with ammonium nitrate, according to John C. Brown, county agent. Six hundred acres also received an application of muriate of potash. About 100 lb. an acre of each of these materials were used. Boyle farmers also planned to spray for the bluegrass plant bug. Mr. Brown said spraying and fertilizing would probably double seed production.

SAFETY MEETING

(Continued from page 1)

will be made to get as members, many of the smaller plants who do not now belong. J. C. Kato, National Safety Council representative, addressed the executive committee briefly, pointing out that the fertilizer safety group has made faster progress than nearly any other section of NSC.

He pointed out that 20 new members have joined the group since April and no cancellations have been received, a record he described as being very worthwhile.

Dr. Charles Nelson, University of Chicago, reported on progress being made on the motivation study he is conducting for the group. He told of visiting many plants and talking to the personnel on various levels to determine attitudes toward safety and toward management.

He said there are many problems involved in supervision of fertilizer plant employees since they are super sensitive about small differences in position in their ranks. Supervisors, he found, are regarded as "disruptive factors."

The accident frequency rate, he said, is keyed to workers' attitudes and it is therefore important to determine what these attitudes are.

The safety executive committee will hold its next meeting at Charleston, S.C., on Nov. 24, it was decided at the meeting.

PECAN GROWERS TO MEET

MONROE, LA. — The Louisiana Pecan Growers Assn. will hold its annual meeting on June 21. Most of the convention will be held at the pecan orchard on the Guy Stubbs estate five miles east of Monroe on Highway 80, but headquarters of the convention will be at the Frances Hotel at Monroe.

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The regional circulation of this issue is concentrated in the Southern states.

Controls Do the Job

We recall an old song of very light nature, in which the question is asked, "How much wood would a woodchuck chuck if a woodchuck would chuck wood?" A satisfactory answer was never forthcoming, as we remember, but a similar question of more practical nature, regarding the amount of food that can be consumed by a grasshopper, has been answered well by entomologists at the New Mexico State College.

In a recent news letter, they observe that "grasshoppers, an ancient enemy of man, have again moved in on the ranchers and farmers of New Mexico. Large areas in the eastern half of the state have been invaded and ranchers in this portion of the state are faced with the necessity of controlling the grasshoppers or trying to find some 'rent land' for their cattle," the notice says.

"Counts of grasshoppers running from 40 to 200 individuals per square yard have been reported from various areas in the state. Most ranchers don't realize how much damage a grasshopper can do. Surveys have shown that in Montana, seven grasshoppers per square yard reduced the carrying capacity of the range 54%. Tests run in Illinois have shown that 17 adult grasshoppers per square yard over a forty acre alfalfa field will eat a ton of dry hay per day.

"Ranchers in the state where control programs have been carried out are almost unanimous in their praise of spraying. They figured that rent on pasture to take place of grass that grasshoppers ate was two and three times the cost of spraying.

"Not only that but the spraying, where done in large blocks, has kept grasshoppers down for up to four years. Land in northwestern New Mexico that was sprayed in 1951 and 1952 is still free of grasshoppers while land not sprayed in the same general area, still has lots of grasshoppers.

"Entomologists of the Grasshopper Control Division, Plant Pest Control Branch, USDA, thought that this year New Mexico might have fewer grasshoppers than in the past few years. This idea did not hold up though since several of the known infestations have 'blown out' and cover larger areas than originally expected. Two new infestations have turned up and look like they may turn into large areas. Right now infestations are found in numerous areas. The estimated numbers will be revised, probably upward, as the season progresses."

In just a few counties of New Mexico, the grasshopper count referred to above was over a million, with the potential being much higher.

Just another obvious case where insecticidal sprays pay off in controlling these hungry hordes. When the ranchers themselves find through experience that it really pays to kill the 'hoppers, then this fact should serve as a tip to sales people in the insecticide trade. With this much of the sales job done, the next step is to tell them what materials to use and how to apply them to the best advantage.

Pesticides Raise Yield

Should there be any lingering doubt in the minds of cotton growers about the value of pesticides, particularly insecticides, in increasing the yield of crops, a recent summary of the U.S. Department of Agriculture's 16-year test should erase any suspicion that the application of chemicals for insect control is of questionable worth.

Tests made at Waco, Texas, by government scientists, indicated that during the sixteen consecutive years of comparing treated with untreated planting on a total of nearly 6,000 acres, yield averages of 1,003 lb. seed cotton an acre for the treated fields

and only 719 lb. for untreated plots were tabulated.

The smallest gain noted during the 16-year experiment was 9.9% increase for the treated fields (in 1939), and the highest recorded was an increase of 157% over untreated acres in 1946. Use of the insecticides resulted in higher yields during every year (1939-1954) of the test.

Use of the newer insecticides, beginning in 1945, made a striking improvement in cotton yields, the entomologists report. Before 1945, when inorganic insecticides such as arsenicals, were relied upon for pest control, the average yield increase from treatment was 33½%, which isn't bad. Since then, however, the increase in yield due to treatment with organic insecticides has been 53%!

USDA previously announced results from an even longer term experiment on the effectiveness of insecticides on cotton. At the Tallulah, Ala., Cotton Insect Laboratory, an experiment ran for 34 years, showing that insect control increased average yields by 25.5%. However, since 1939, the average increase due to insect control at Tallulah has been 50%.

It would be a mistake, of course, to assume that since these figures have been released, everything is taken care of in good shape. If the industry should be inclined to sit back and say, "Well, now, that cotton growers are convinced, let's go fishing," it is a hazardous assumption.

The USDA findings are impressive and true, but it takes far more than that to move growers into the frame of mind where they will be willing to spend more than previously on insect control.

The thing that remains to be done is along the line of continuing educational effort, calling these facts to their attention and suggesting strongly that pesticides be used as insurance against insect attacks rather than as a frantic means to stop infestations after they get under way.

The fact is surely established beyond all reasonable doubt, that when insects are controlled, yields go up. It also establishes the fact that right now there are plenty of effective materials available to do the job if the serious bottleneck of distribution can be avoided.

Dealers throughout the cotton belt can build a wonderful sales talk around USDA's convincing report. So can dealers and manufacturers in other parts of the country where the cotton pest control experience may be applied to other crops with just as much effectiveness.

We are glad that these tests were made. Obviously, they can't be done in a hurry, particularly when one considers that the experiments covered periods of 16 and 34 years. Science is seldom in a hurry, but sometimes results seem awfully slow in coming. This is a case, however, where we do have the results and there's no waiting.

Let's use this information to show growers everywhere that when the bugs are under control, crop yields and profits soar far above the cost of the pesticidal materials.

Quote

"I'm a zealous believer in conservation, both as a national policy and as a personal creed. I have seen, first hand in many parts of the world, what soil and fertility losses can do to civilizations. I have crossed great deserts that once were fertile granaries, now laid waste because man wasn't intelligent enough, or didn't care enough to preserve his soil. To build a strong, secure United States, we must save and improve our soil. We aren't now doing the job fast enough or well enough."—President Eisenhower.



CROPLIFE is a controlled circulation journal mailed to those responsible for the production and distribution of fertilizer and other farm chemicals and to retail dealers of the agricultural chemical industry in the U.S. To those not on the controlled list, CROPLIFE is available at \$5 for one year, \$9 for two years (\$8 a year outside the U.S. and possessions). Single copy price, 25¢.

LAWRENCE A. LONG

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MEETING MEMOS

June 21—Western Agricultural Chemicals Assn., Spring Meeting, Clark Hotel, Los Angeles; O. O. Barnard, 2466 Kenwood Ave., San Jose 28, Cal., Secretary.

June 22—Pacific Slope Branch, Entomological Society of America, Mission Inn, Riverside, Cal.

June 22-24—Association of Southern Feed & Fertilizer Control Officials, Jung Hotel, New Orleans.

June 24-26—Delmarva Peninsular Fertilizer Assn., Annual Convention, George Washington Hotel, Ocean City, Md.

June 27-29—North Central Branch, American Society of Agronomy, Summer Meeting, Ames, Iowa.

June 28-30—Sixth Annual Pacific Northwest Plant Food Assn., Regional Fertilizer Conference, Boise Hotel, Boise, Idaho; Leon S. Jackson, 702 Lewis Bldg., Portland, Ore., Secretary.

July 5-8—Plant Food Producers of Eastern Canada, Bigwin Inn, Muskoka, Canada.

July 14-15—Southwest Fertilizer Conference and Grade Meeting, Buccaneer Hotel, Galveston, Texas.

July 20-21—Great Plains Agricultural Ammonia Assn. Midwest Trade Show & Field Day; Business Session for Members July 20 at Hotel Fort Des Moines, Des Moines, Iowa; Field Day July 21 near Ames; James Andrew, Box 447, Jefferson, Iowa, Secretary.

July 27-29—Northeast Branch, American Society of Agronomy, University Park, Pa.

Aug. 8-10—Summer Meeting of

North Central Division, American Phytopathological Society, Wooster, Ohio; further information from H. C. Young, Dept. of Botany & Plant Pathology, Ohio Agricultural Experiment Station, Wooster, Ohio.

Aug. 9-11—Ohio Pesticide Institute Meeting and Field Tour, Wooster, Ohio; Dr. J. D. Wilson, Ohio Agricultural Experiment Station, Wooster, Secretary.

Aug. 10—Kentucky Fertilizer Conference; Guignol Theatre, University of Kentucky, Lexington.

Aug. 15—National Joint Committee on Fertilizer Application, Cooperative Meeting with the American Society of Agronomy, University of California, Davis Campus.

Aug. 15-19—American Society of Agronomy and Soil Science Society of America, University of California, Davis Campus.

Aug. 15-20—Farm & Home Mechanization Pageant, Michigan State College, East Lansing, Mich.

Sept. 7-9—National Agricultural Chemicals Assn., Spring Lake, N.J.; Lea S. Hitchner, NAC Executive Secretary, 1145 19th St. N.W., Washington 6, D.C.

Sept. 7-9—Ninth Annual Beltwide Texas A&M College, National Cotton Council of America, Box 18, Cotton Mechanization Conference, Memphis 1, Tenn.

Oct. 17-18—Fertilizer Section, National Safety Congress, LaSalle Hotel, Chicago; Thomas J. Clarke, Chairman.

Oct. 27—Middle West Soil Improve-

ment Committee, Annual Meeting, Sherman Hotel, Chicago; Z. H. Beers, Executive Secretary, 228 N. LaSalle St., Chicago, Ill.

Nov. 2-3—Annual Convention, Pacific Northwest Plant Food Assn., Pilot Butte Inn, Bend, Ore.; Leon S. Jackson, 702 Lewis Bldg., Portland, Ore., Secretary.

Nov. 3-4—Northeastern Division, American Phytopathological Society, Eastern States Farmers Exchange, Inc., 26 Central St., West Springfield, Mass. B. H. Davis, Department of Plant Pathology, Rutgers, University, New Brunswick, N.J., secretary.

Nov. 7-8—California Fertilizer Assn., Thirty Second Annual Convention, Hotel Mark Hopkins, San Francisco; Sidney H. Bierly, Executive Secretary & Manager, 475 Huntington Drive, San Marino, Cal.

Nov. 17-18—Nitrogen Solution Field Day, National Nitrogen Solution Assn., State Armory, Springfield, Ill.; Roy F. Broyhill, Dakota City, Neb., meeting chairman.

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Chase Bag Co.....	The Mackwin Co.....	Union Bag and Paper Corp.....
Chipman Chemical Co.....	Markley Laboratories, The.....	United Petroleum Gas Co.....
Clover Chemical Co.....	Wilson & George Meyer & Co.....	U.S. Industrial Chemicals Co.....
Commercial Solvents Corporation.....	Michigan Chemical Corporation..... 17	United States Phosphoric Products Division
Croplife..... 18	Midstate Machinery Co.....	Tennessee Corp.....
Deere & Co., Grand River Chemical Div.....	Midwestern Spray-Chemical Co., Inc..... 7	United States Potash Co..... 6
Diamond Alkali Company.....	Naugatuck Chemical Div., U.S. Rubber Co.....	U.S. Rubber Co., Naugatuck Chemical Div.....
Doane Agricultural Service.....	Nelson, Edward S., Ltd.....	United States Steel Corp.....
Dunco, Inc..... 23	Nitrogen Div., Allied Chemical & Dye Corp....	Velsicol Corporation.....
Douglas Chemical Co.....	Northern Chemical Industries.....	Virginia-Carolina Chemical Corp..... 19
E. I. DuPont de Nemours & Co., Inc.....	Olin Mathieson Chemical Corporation,	Vulcan Stamping & Mfg. Co.....
Ellsworth Equipment Co.....	Insecticides Division.....	Vulcan Steel Container Co.....
Export Chemical Corp. of Colorado.....	Pacific Coast Borax Co.....	

YEAR AFTER YEAR, COTTON FARMERS SELECT THIS SAME INSECTICIDE



◆ **TOXAPHENE CUT WEEVIL INFESTATION**—B. B. Everett, Palmyra, North Carolina, outstanding cotton farmer of Halifax County, is using toxaphene for the fourth straight year. "Last year we started poisoning about the 10th of June, and made toxaphene applications every seven days until the time of general boll weevil migration," he said. "We kept infestations below five per cent and produced a fine crop."



◆ **MAIN STANDBY IS TOXAPHENE**—Orville Odom, veteran aerial applicator of Bradley, Arkansas, says, "I think the farmers I work for have as high a yield per acre on their cotton as anywhere in the country. For the years I have been here, working for the same farmers over and over, I have found their main standby is toxaphene."

Successful cotton growers everywhere have found that early season control of insect pests with toxaphene pays off at picking time (with more cotton per acre.)

Right now the overwintered boll weevil and a mixed population of other pests—flea-hoppers, thrips, cutworms—threaten cotton fields in many areas. Prompt control measures with

toxaphene protects your crop now and can prevent later buildups.

Compare notes on insecticide performance with other growers in your community. We're confident you'll find that year after year toxaphene has been the best cotton insecticide buy.

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